

ALTERNATE ENERGY-RELATED USES ON THE OUTER CONTINENTAL SHELF

HEARING BEFORE THE COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE ONE HUNDRED TENTH CONGRESS FIRST SESSION

TO

RECEIVE TESTIMONY ON ALTERNATE ENERGY-RELATED USES ON THE
OUTER CONTINENTAL SHELF: OPPORTUNITIES, ISSUES, AND IMPL-
EMENTATION OF SECTION 388 OF THE ENERGY POLICY ACT OF 2005

JUNE 7, 2007



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ALTERNATE ENERGY-RELATED USES ON THE OUTER CONTINENTAL SHELF

THURSDAY, JUNE 7, 2007

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:05 a.m., in room SD-366, Dirksen Senate Office Building, Hon. Jeff Bingaman, chairman, presiding.

OPENING STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

The CHAIRMAN. I think we'll go ahead and get started. I believe Senator Domenici is on his way, and I know some of the other Senators are, as well; but, unfortunately, we're going to have some votes here in the next hour, I believe, on the Senate floor, so we need to go ahead.

Today, the committee will hear testimony regarding the opportunities for alternative energy on the Outer Continental Shelf. I look forward to hearing about the role that alternative energy generated on the Outer Continental Shelf can play in meeting our Nation's energy needs.

One focus of the hearing will be the progress in implementing Section 388 of EPAct 2005, which authorizes the Secretary of Interior to issue leases, easements, and rights-of-way for alternative energy projects and alternate uses on the OCS.

Pursuant to that authority, the Minerals Management Services is developing regulations and a programmatic environmental impact statement for an alternative energy and alternate-use program on the OCS. However, I understand that the Federal Energy Regulatory Commission is also asserting jurisdiction under the hydropower provisions of the Federal Power Act for purposes of licensing ocean energy projects on the OCS.

The MMS has filed formal protests to the assertion of jurisdiction by FERC over these projects. MMS argues that the hydroelectric licensing provisions are not appropriate for wave energy projects. For example, MMS points out that a 30- to 50-year license under the hydropower provisions is too long for exclusive use by prototype projects with uncertain cumulative impacts. It's unclear to me whether both agencies should play a role with respect to authorizing these projects. One goal in enacting Section 388 was to simplify the authorization process for alternative energy projects. FERC's hydroelectric licensing process has a history of being com-

plex. I'm not certain that applying the hydroelectric licensing process fits that well in this context.

I understand that FERC and MMS have been working on a memorandum of understanding on these jurisdictional issues, and look forward to hearing from the Department of Interior, FERC, the State of Oregon, and other witnesses on the topic.

Long-term potential for the generation of electricity off the coasts of the United States is enormous. National Renewable Energy Laboratory estimates there's a potential for 266 gigawatts of wind energy development on the OCS. According to an Electrical Power Institute study, the estimated potential for wave and current power from our oceans is over 350 billion kilowatt hours per year. It's important that the process for authorizing these projects facilitates production of this energy, also that it ensures environmental protection and appropriate siting.

So, I thank all the witnesses for being here. We have two panels. Why don't we start with the first panel. We're very pleased to have the Honorable Stephen Allred, who is the Assistant Secretary for Land and Minerals Management in the Department of Interior; J. Mark Robinson, who is the director of the Office of Energy Projects for the Federal Energy Regulatory Commission; and Michael W. Grainey, who is the director with the Oregon Department of Energy, in Salem, Oregon.

Thank you all for being here. Why don't we just have you summarize your testimony in that order that I've introduced you, and we'll have some questions.

So, Steve, thank you for being here.

**STATEMENT OF C. STEPHEN ALLRED, ASSISTANT SECRETARY
FOR LAND AND MINERALS MANAGEMENT, DEPARTMENT OF
THE INTERIOR**

Mr. ALLRED. Thank you, Mr. Chairman, for giving us the opportunity to discuss alternative energy. We continue to be concerned, as I've talked with you before, about the imbalance between our energy consumption in the United States and domestic energy production. In the months since you've confirmed me to this position, I've become acutely aware of that issue and the challenges that we face as a Nation regarding our energy needs. I've come to believe that there is no silver bullet. We have to aggressively pursue all of the energy opportunities that we have if we're to meet those needs. Increasing the supply of renewable and alternative fuels is imperative in that effort.

The Energy Information Administration's 2007 Annual Energy Outlook estimates that, between 2007 and 2030, renewable energy production will grow by 57 percent, and, by 2030, will account for 10 percent of the domestic production and 7 percent of our consumption. Interest in the Outer Continental Shelf-based alternative energy development in the United States is growing rapidly, particularly in the Northeast and along the West Coast.

As you are probably aware, New York, Oregon, and California, for example, have set specific targets for renewable energy production. With the enactment of EPAct in 2005, Congress gave Interior new authorities for encouraging and facilitating the development of these promising new energy resources.

Today, I'll focus specifically on the Minerals Management Services Outer Continental Shelf Alternative Energy Program.

Through Section 388 of EPAct, Congress recognized that effective development and management of alternative energy would require comprehensive authority to permit access in a fair and equitable manner, to assure environmental and operational compliance, and to achieve a fair return to the Nation. Congress provided that authority to Interior for the OCS.

While the Department's the lead agency for this program, MMS continues to work with other agencies to make certain that the unique role of each agency is considered and addressed while providing for a single-point processing, to the extent possible.

Questions have arisen, as you indicated, as to which Federal agencies have authority to authorize certain OCS projects. To address these questions, short of any legislative action, MMS approached the Federal Energy Regulatory Commission to seek the development of a memorandum of understanding to resolve these issues specifically with regard to wave energy.

On June 5, after a number of meetings, the Department provided a draft of a memorandum to FERC, which I understand they are currently reviewing. While we believe that EPAct established MMS as the lead agency with regard to the OCS, we want to assure that FERC's concerns regarding the transmission of electrical energy are addressed as part of our regulatory program.

With regard to development of the OCS Renewable Energy Program under EPAct, the Department and coastal States, with which will receive, as you remember, 27 percent of the revenues generated within the first 3 miles of the Federal waters off their shores, share a common goal of promoting the development of new alternative energy technologies in the marine environment in a safe, orderly, and environmentally responsible manner.

In developing this program, MMS has held ten scoping meetings and nine public hearings on the draft programmatic EIS, which was published on March 21 of this year. The public comment period ended on May 21. We anticipate that the final programmatic EIS will be issued in late summer.

To implement the proposed program, MMS also must draft proposed rules, and, during that period of time, we have held four regional stakeholder meetings in the Northwest, Northeast, and the South, to discuss the Alternative Energy Program. That program is now under internal review within the Department, and we anticipate that we will have that proposed rule late this summer.

There were two projects that you also gave us—responsible for the legacy projects, both Cape Wind and the Long Island Offshore Wind Project. Just a word about those.

For Cape Wind, we anticipate the publication of the draft EIS in August of this year. We will be holding public hearings in Massachusetts on the draft EIS this fall, and issuing a record of decision early in the summer of 2008.

In June 2006, we conducted public scoping meetings in preparation of the draft EIS for the Long Island Project. Since that time, we have identified additional information that we need in order to complete that EIS, and we are working with Florida Power & Light and Long Island Power Authority to gather that information.

Producing energy from alternative and renewable energy resources is critical to the Nation's energy portfolio. We are working to achieve a clear, efficient, and easily understood regulatory program that will encourage the most rapid development of that energy resource. We are committed to such a program, and to working both with this committee and others to assure that it is in place and operating efficiently.

Thank you for the opportunity to visit with you today.

[The prepared statement of Mr. Allred follows:]

PREPARED STATEMENT OF C. STEPHEN ALLRED, ASSISTANT SECRETARY FOR LAND AND MINERALS MANAGEMENT, DEPARTMENT OF THE INTERIOR

Mr. Chairman and Members of the Committee, thank you for the opportunity to appear here today to discuss with you the Minerals Management Service's (MMS) alternative energy and alternate use program.

The Department of the Interior appreciates the leadership that the Committee on Energy and Natural Resources has demonstrated in looking to the Federal Outer Continental Shelf (OCS) as a source of alternative energy and in providing the legislative means to allow the Nation to tap into that energy. The Administration first proposed legislation to establish an OCS alternative energy program in June 2002, and the legislation was first introduced as H.R. 5156 in July 2002. The Administration supported that bill and worked diligently with the Committee and others to bring the proposed legislation to fruition as part of the Energy Policy Act of 2005 (EPAct).

Energy is vital to expanding our economy and enhancing Americans' quality of life. However, the Administration continues to be concerned with the imbalance that exists between our energy consumption and domestic energy production, and has been working to find ways to narrow the gap between the amount of energy used and the amount domestically produced. In his State of the Union Message on January 23, 2007, President Bush asked Congress and America's scientists, farmers, industry leaders, and entrepreneurs to join him in pursuing the goal of reducing U.S. gasoline usage by 20 percent in the next 10 years—20 in 10. One key component of the strategy to meet this goal is to increase the supply of renewable and alternative fuels. There is no single solution, but the Administration believes that renewable and other alternative sources are integral components of our Nation's energy future.

The Energy Information Administration's (EIA) 2007 Annual Energy Outlook estimates that consumption of renewable energy will grow from 6.5 quadrillion British Thermal Units (BTUs) in 2005 to 10.2 quadrillion BTUs in 2030. This growth will be a result of advancements in renewable energy technologies, higher fossil fuel prices, state requirements to produce renewable energy, and incentives provided under EP Act. This is an increase of about 1 quadrillion BTUs more than EIA estimated in its 2005 Annual Energy Outlook. The EIA currently estimates that in 2030, renewable energy will account for over ten percent of our domestic energy production and about seven percent of our consumption.

The EPAct encourages the development of renewable energy resources as part of an overall strategy to develop a diverse portfolio of domestic energy supplies for our future. In fact, according to EIA's 2007 Annual Energy Outlook, public and private wind and other renewable energy generating sectors of our economy are the fastest growing energy sources in the United States.

The quantity of domestic renewable energy produced on Federal lands is small in comparison to conventional resources. However, the growing cost of conventional energy resources and the need to diversify our energy portfolio has spurred an increased interest in renewable energy development on federal lands both onshore and offshore.

The Department of the Interior (Department), as the manager of over one fifth of the Nation's land, plays a significant role in this projected increase in domestic renewable energy production. Lands managed by the Bureau of Land Management (BLM) currently supply almost half of the nation's geothermal generation and approximately 4 percent of domestically installed wind capacity. The EP Act gave the Department's bureaus, specifically the Minerals Management Service (MMS), the BLM, and the United States Geological Survey (USGS), new authorities for encouraging and facilitating the development of promising new energy sources such as onshore and offshore wind, solar, and biomass energy and to assist in ensuring these technologies are developed in an environmentally responsible manner.

Today, you have requested that I discuss with you the MMS's OCS Alternative Energy Program. The Administration first proposed legislation to establish an OCS alternative energy program in June 2002, and the legislation was first introduced as H.R. 5156 in July 2002. That bill represented the results of more than six months of extensive discussions and collaboration with all Federal agencies having permitting responsibilities on the OCS, as well as the President's Task Force on Energy Project Streamlining. More important, the legislation was developed in a consensus with MMS' sister agencies and reflected the best efforts of the Administration to address the array of issues associated with permitting various OCS energy-related projects that were not currently covered under existing statutes. Those projects included renewable energy projects such as wind, wave, ocean current and solar energy.

After careful analysis of the mechanisms that were currently in place to handle requests for innovative, non-traditional energy-related projects on the Federal offshore lands, it became clear that—with limited exceptions—there existed no clear authority within the Federal government to comprehensively review, permit, and provide appropriate regulatory oversight for such projects. The exceptions to this general rule included oil, gas and other mineral activities permitted under the OCS Lands Act (43 U.S.C. 1301 et seq., Department of the Interior); offshore oil terminals permitted under the Deep Water Ports Act (33 U.S.C. 1501 et seq., Department of Transportation); and projects permitted under the Ocean Thermal Energy Conversion Act (42 U.S.C. 9101 et seq., Department of Commerce).

This meant that the vast majority of OCS alternate energy-related projects that were being proposed, or which may be contemplated in the future, by the private sector had no clearly defined permitting process. There was no single agency with an overarching role to coordinate that process. Instead, various Federal agencies with different responsibilities were responsible for permitting a specific part of a proposed project. The Department of the Interior is regarded as the Federal Government's primary "land manager." Since the proposed legislation pertained to the permitting and oversight of energy uses on offshore Federal lands, it was only logical that any new legislative authority that was enacted remain with the Department already entrusted with that overall responsibility.

Congress recognized that management of alternative energy and alternate use activities would require comprehensive authority to permit access in a fair and equitable manner, to ensure environmental and operational compliance, and to achieve a fair return to the Nation. The Administration worked closely with this Committee to include the Administration's legislative proposal as part of the EP Act.

Section 388 of the EPAct amended the OCS Lands Act, and granted the Department discretionary authority to grant leases, easements or rights-of-way for activities on the OCS that produce or support production, transportation, or transmission of energy from sources other than oil and gas. Simply put, the new authorities under EPAct gave the Department the ability to manage the future development of promising new ocean energy sources in the OCS such as wind, wave, ocean current, and solar energy. Additionally, the Department was given the authority to grant leases, easements, or rights-of-way for other OCS activities that make alternate use of existing OCS facilities. These other uses would be limited to energy-related and authorized marine-related purposes, such as offshore research, recreation and support for offshore operations to the extent that those activities are not authorized by other applicable law.

While the Department is the lead agency for this program, the MMS continues to work with its sister agencies to make certain that the unique role of each agency is considered and addressed in order to ensure that the Federal Government's myriad interests in such projects are fully considered and that the Nation's economic, environmental and land use interests are adequately protected. The Department's new EPAct jurisdiction does not supersede or modify existing Federal authority; all activities permitted must adhere to existing Federal law, including the National Environmental Policy, Coastal Zone Management, Endangered Species, Marine Mammal Protection, Magnuson-Stevens Fishery Conservation and Management, and the Migratory Bird Treaty Acts.

The MMS is working diligently to develop a regulatory program to authorize offshore alternative energy proposals, such as wind, solar, wave, and ocean current technologies. The public comment period for the renewable energy and alternate use draft programmatic environmental impact study (EIS), developed by the MMS, closed on May 21, and MMS is reviewing the comments received. The EIS will form the foundation for the new alternative energy program and for future applications. The MMS is developing regulations to implement the new EPAct authority and expects to publish a proposed rule in late summer of 2007 and a final rule in early 2008.

Interest in OCS-based alternative energy development in the United States is growing, particularly in the Northeast and along the West coast. Many of these coastal states have put in place renewable energy portfolio standards (RPS) requiring utilities to substantially increase their reliance on renewable energy sources. For example, in the Northeast, New York has set a goal for public utilities to achieve a 25% share by 2013, one of the most aggressive targets in the country. In the Pacific West, Oregon has instituted a plan that calls for renewable energy to account for a 25% share, approximately 1,600 megawatts (MW) by 2025, while California has codified a renewable energy target of 20%, approximately 5,500 MW, by 2010. To put this into perspective, according to the Edison Electric Institute, based on 2005 average annual usage by U.S. residential customers, one megawatt of electricity powered roughly 790 homes. The OCS can provide clean sources of energy and has a role in helping states and the Federal Government meet their renewable energy targets.

Government resource estimates and industry interest indicate that the OCS provides several significant sources of alternative energy. According to estimates provided to the MMS by the Department of Energy (DOE), the potential offshore wind resource, excluding Alaska and Hawaii, is 2,500 gigawatts (GW), ocean waves 240 GW, ocean tides 7.5 GW, and ocean currents 2.5 GW. Since the enactment of EPAct, the MMS has spoken to several companies and become aware of dozens of potential development proposals involving offshore wind off the east coast from Virginia, north to Massachusetts.

The strongest wave energy resources are located on the west coast, where there is already substantial interest in wave energy development, particularly offshore Northern California and Oregon. Currently, the MMS is discussing with the Federal Energy Regulatory Commission (FERC) a Memorandum of Understanding (MOU) to coordinate Federal efforts in reviewing and authorizing these exciting new proposals. The Department's desire with regard to that memorandum is to assure that FERC's interest and authorities with regard to the transmission of electrical energy issues are considered as part of the regulatory program for which we believe MMS has the lead responsibility on the OCS.

ALTERNATIVE ENERGY AND ALTERNATE USE ON THE OUTER CONTINENTAL SHELF

The Department and MMS decided that to facilitate the orderly development of the new programmatic responsibilities and associated rulemaking, we would not entertain for review any new applications relating to alternative energy or alternate use on the OCS until the program is in place. We believe that this transparent process allows those interested in developing projects, the states, Congress, and the public to understand and provide their input into how that the program is established. While we recognize that this creates some delay for project proponents, we believe that potential delays and challenges after the program is adopted will be minimized.

As the first step in the rulemaking and program development process, the MMS on December 30, 2005, published an Advance Notice of Proposed Rulemaking (ANPR) to solicit comments from all interested and affected parties. The ANPR sought comments on five major program areas: (1) access to OCS lands and resources; (2) environmental information, management, and compliance; (3) operations; (4) payments and revenues; and (5) coordination and consultation. We received a total of 149 comments originating from 26 states and the District of Columbia. These comments were submitted by private citizens, alternative energy industries and associations, environmental organizations, State and local governments, Federal agencies, nongovernmental organizations, universities, Members of Congress, small business, and the oil and gas industry. In general, the ANPR comments were supportive of renewable/alternative energy developments on the OCS and reuse of existing OCS facilities. Some comments received advised the MMS to proceed with caution as it develops the program and supporting regulations and advocated early stakeholder involvement with both the program and the individual project permitting. Many commenters who were familiar with the MMS OCS oil and gas program suggested that MMS use the offshore program as a model for consultation and environmental compliance. The renewable energy industry and environmental groups suggested that MMS establish a structured, rigid process, citing the need for predictability and for compliance and timeliness in reviews. Others, noting the up-and-coming nature of the renewables industry, advocated that MMS remain flexible in our program approach and address each project on a case-by-case basis. A majority of comments identified preparation of a programmatic environmental impact statement as a first step.

The MMS is preparing rules to guide the development of the program activities. At the same time, MMS's programmatic EIS will examine the potential environ-

mental consequences of implementing the program. However, the innovative and evolving nature of the offshore renewable technologies; the nascent industry; the need to acquire environmental and economic baseline information; and, the location of the promising resources in OCS frontier areas have all presented challenges to the program's regulatory development.

Despite these challenges, the MMS is proceeding in a deliberate and diligent manner in developing this important new regulatory program. The Agency has been working with many of the same agencies involved in activities already authorized under the OCS Lands Act, such as the Army Corps of Engineers, the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, the U.S. Coast Guard, and the Fish and Wildlife Service, to establish new "renewable energy" interfaces with each agency's existing Federal statutory requirements and responsibilities. The MMS has also begun to forge new partnerships with the DOE and FERC and we are actively working on agreements with each agency.

On March 21, 2007, the MMS announced the availability of the draft programmatic EIS and the opportunity for public comment. This document is a high level analysis of the potential impacts of the activities that could result from establishment of an OCS alternative energy and alternate use program and regulations under MMS' new authority, from initial site characterization through decommissioning. The analysis looks at three alternatives: (1) establishment of a nationwide OCS program and regulations (the proposed action); (2) case-by-case authorization of activities; and (3) no authorization of activities authorized under section 388. The programmatic EIS does not evaluate specific sites on the OCS as to their suitability for alternative energy activities. Thus, MMS will analyze siting issues as it considers specific project proposals. The public comment period for the draft programmatic EIS closed on May 21, 2007 and MMS held public hearings on the document in April and May of 2007. The MMS is reviewing the comments received and revising the programmatic EIS where appropriate. The final programmatic EIS is on schedule for publication in late summer 2007.

Currently the proposed rule is undergoing internal Departmental review in accordance with Departmental and the Office of Management and Budget guidelines. Major components of the alternative energy portion of the rule include, but are not limited to what rights will be associated with leases, rights-of-way, rights-of-use and easements; financial terms such as financial assurance (bonding); rentals before production begins and operating fees when production commences; process for site assessment, construction and operation plans; environmental and safety management, inspections and facility assessments; and, end of life decommissioning.

The EPAct requires the Department to grant a lease, easement, or right-of-way on a competitive basis unless, after public notice, it is determined that there is no competitive interest. If there is no competitive interest, many of these initial applications may be issued noncompetitively, requiring the applicant to bear the cost of proposal-specific studies. However, based on the state-initiated renewable energy portfolio standards and interest from industry, it is expected that MMS will offer a competitive lease sale in the next 3 to 5 years most likely in the North Atlantic or the North Pacific.

The MMS recently conducted a series of regional stakeholder meetings in several coastal states to assist in preparing the new rule. The purpose of these meetings was to identify and explore stakeholder issues and concerns; to discuss the various ocean energy technologies and economics; and, to identify state energy profiles and renewable energy portfolio standards.

Several coastal states (i.e., New Jersey, California, Washington, and Oregon) have approached MMS about partnering to efficiently evaluate and offer prospective OCS areas for lease on a regional basis. The U.S. Commission on Ocean Policy, the Pew Oceans Commission, and the Joint Ocean Commission Initiative, made similar recommendations concerning federal-state partnering to improve ocean governance in general. To promote such cooperation and coordination, the MMS proposes to establish federal/state task forces—a concept that has been used successfully in MMS's Marine Minerals Program—and to begin assessing potential development and environmental implications.

CAPE WIND AND LONG ISLAND OFFSHORE WIND PROJECTS

The EPAct also gave the Department and MMS responsibility for two existing offshore alternative energy proposals, the Cape Wind Energy and the Long Island Offshore Wind Park projects. The MMS is reviewing each proposal and supporting information, and is preparing project-specific environmental analyses.

Cape Wind Associates has proposed to construct an offshore wind facility located on Horseshoe Shoal in Nantucket Sound covering 24 square miles in federal waters

and located 4.7 miles offshore Massachusetts. The proposal entails 130 offshore wind turbine generators to produce about 460 MW of electricity. The MMS anticipates publishing the draft EIS in late summer 2007. Because offshore wind is a new resource and technology for the Nation and Cape Wind is one of the first OCS alternative energy projects under review by MMS, the agency is proceeding with the review of the proposal and associated EIS in an appropriately deliberate and diligent manner.

The Long Island Power Authority and Florida Power and Light Energy have proposed an offshore wind project covering eight square miles in Federal waters, located between three and four miles off the south shore of Long Island, New York. The proposed wind project would entail installation of 40 offshore wind turbine generators with a capacity of 140 MW of electricity for use in Long Island communities. The timeline for the project is being revised and should be available in the near future.

CONCLUSION

In conclusion, energy is vital to expanding our economy and enhancing Americans' quality of life. Producing energy from renewable and other alternative domestic resources is a critical component of the Nation's energy portfolio. Lands managed by the Department have a major role to play in the diversification of the Nation's energy sources. The Department has been working with other agencies and has taken steps in a variety of scientific endeavors to understand renewable and other alternative energy resources and to help bring them to a place where they may contribute to the energy mix of the country in an environmentally friendly way. The MMS has been working on a variety of fronts, both onshore and offshore, to meet the demand for renewable and other alternative sources of energy. We stand ready to respond to the ever-increasing need for energy development from the resources we manage on behalf of the Nation.

Thank you for the opportunity to highlight a few of the steps MMS has taken to encourage the development of renewable and other alternative energy resources on the OCS public lands. This concludes my testimony. I would be happy to answer any questions you have.

The CHAIRMAN. Well, thank you very much.

Let me just, first, ask if Senator Domenici wanted to make any kind of opening statement before we go on with these other two witnesses.

Senator DOMENICI. I have a very brief one, and I'll just put it in the record, Mr. Chairman. Thank you.

The CHAIRMAN. All right.

[The prepared statement of Senator Domenici follows:]

PREPARED STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM NEW MEXICO

Good Morning. I'd like to thank Senator Bingaman for calling this hearing. I'd also like to add my thanks to our witnesses for being with us today.

The purpose of today's hearing is to receive testimony on the implementation of Section 388 of the Energy Policy Act of 2005. Section 388 represents a new Congressional policy designed to encourage the development of alternate energy projects on the Outer Continental Shelf such as offshore wind and ocean energy.

The potential energy production from these alternate projects is significant. According to the Energy Department, offshore wind resources could generate an additional 2,500 gigawatts (GW) of energy. And FERC estimates that new power produced from ocean currents, tides, and wave action could double the nation's existing 54 GW of hydropower capacity. DOE calculates that one GW alone can power up to 800,000 households.

Under EPOA, Congress directed the Minerals Management Service, in consultation with other relevant federal agencies, to issue the necessary regulations for alternate energy production on the OCS within 9 months of the bill's enactment. We are still waiting for these regulations to be issued.

I'm disappointed that it is taking so much time for the MMS to develop its program and get it up and running. Almost two years after the enactment of EPOA, we still don't have any offshore wind energy projects in this country—far behind what Europe has already achieved. We are now in a situation where the proposed Cape Wind project, which has received all of the needed state permits, is in danger

of having those permits lapse before the MMS takes action. This is not what Congress intended.

I also understand that there is an ongoing effort between the MMS and FERC on a Memorandum of Understanding to govern how the two agencies interact for those wave projects located wholly or partially on the OCS. I encourage the Administration to resolve this interagency dispute.

In my opinion, we should not be placing this promising, clean energy on hold. The federal government must work to get the alternate energy program for the OCS in place as soon as possible.

I look forward to today's testimony. Thank you.

The CHAIRMAN. Mr. Robinson, why don't you go ahead. Thank you.

STATEMENT OF J. MARK ROBINSON, DIRECTOR, OFFICE OF ENERGY PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION

Mr. ROBINSON. Mr. Chairman, Senators, my name is Mark Robinson and I am the director of the Office of Energy Projects. We're responsible for the authorization of LNG terminals, the certification of natural gas pipelines and storage reservoirs, the permitting of transmission lines for—under backstop licensing authority, and, more significant to this hearing, the licensing of hydroelectric projects, to include these new technologies that are before us now. Specifically, by “new technologies,” I mean current energy, wave energy, and tidal energy.

We've had a surge of activity at the Commission in this area, and I'd just like to highlight a few of the things the Commission has done.

First, we identified criteria that would allow these experimental energy facilities to be tested using the Verdant rule. The Verdant rule allows an entity that identifies a project as an experiment of short duration and not affecting the grid as being available to be constructed and operated without a license from the Commission. That was used by the Verdant people in the East River, New York, and we have several other entities that are using that avenue to test these projects.

Second, we initiated a policy statement, or a policy inquiry, on how we could use preliminary permits to better facilitate these facilities. One of the things that we did immediately was to institute a strict-scrutiny policy on preliminary permits to make sure no one was trying to site bank areas, to lock up areas that would put them off limits for other individuals, who are really trying to pursue projects, to go out and develop those projects.

Third, we have issued 38 preliminary permits for these types of facilities, these new technologies, from Alaska to California, and from Florida to Maine. There is a lot of activity going on right now for real projects.

Fourth, we had our first license filing from Makah Bay. Makah Bay is a project—a wave energy project—that's proposed for off the shore of Washington. There, the application came in November. Seven months later, we issued our environmental assessment. If we get the cooperation that we think we will from the National Marine Fisheries Services under the Endangered Species Act, and from the State of Washington under the Coastal Zone Management Act, we feel like we'll have that project ready for Commission action within 1 year of its having filed its application.

Then, fifth, we have been working with the MMS on an MOU, and I'd like to make two points on that before I go on and describe what we've been doing—or how our licensing process can work for these new technologies.

First, the evidence we have indicates that the majority of the work that we will be doing in this area will not occur in the OCS. As an example, we have 21 pending preliminary permits right now; only three of those even straddle the OCS, one is fully within OCS, and 17 are inside the OCS. So, we think most of our work is certainly going to be inside. It only stands to reason; it's cheaper, the closer you are, in terms of these particular facilities. Right now, testing these facilities has a lot to do with how much they cost and how much it takes to get them in the ocean.

The other point that I'd like to make is, in working on this MOU we are trying very hard—and I think we're making great progress, and we still have an early summer timeframe for trying to complete this—for the MOU to effectively weave our two systems into one, so that there would be no redundancies and the industry would have a known path for how to work with both agencies when there would be a project in the OCS.

Now on to the licensing process very quickly. It's three phases. First, the preliminary permits that I mentioned earlier—that allows an individual to do studies on the economic, the engineering, and the financial feasibility of projects during a period when they have reserved that site. It authorizes no construction, but it just allows someone to take a look over a 3-year period.

Second is licensing. There, it's a process of shared decision-making. Licensing a facility—almost any kind of infrastructure that I mentioned earlier is an exercise in sharing that decision-making authority with other agencies, State and Federal, who have decisional authority. Here, as an example, in the Federal Power Act, section 4(e) would allow an agency, like Minerals Management Service, to provide 4(e) conditions that would be mandatory on the Commission, with no opportunity for change. Whatever they required would have to go into any license issued.

The Coastal Zone Management Act allows the State agency to provide conditions on how a facility should be operated in State waters, and also to deny a CZMA if they don't think it's compatible with their coastal zone purposes.

Then, the State would also have, under 10(j), the opportunity to provide conditions to protect fish and wildlife. Unless the Commission found those to be inappropriate or inconsistent with law, we have to accept them.

We've shown remarkable, I think, flexibility in the existing processes to handle these projects. As I mentioned, in Makah Bay, we set up a program of licensing that allowed the NEPA process to be coincident with the application preparation. For Verdant, we found a way to allow them to test that project, even with the Federal Power Act and the provisions that it has on needing a license to operate a hydropower project.

In closing, I'd just like to say that the Commission is committed to encouraging this new technology. We feel like we are uniquely positioned to ensure that the developmental and nondevelopmental values associated with the development of any infrastructure is

adequately considered through our very transparent and cooperative licensing process that includes the States, includes the Feds, the national—the NGO's, the natives—tribal concerns. Everyone has a role at the table, and everybody can be very effective in helping us license these projects in the public interest.

Thank you very much.

[The prepared statement of Mr. Robinson follows:]

PREPARED STATEMENT OF J. MARK ROBINSON, DIRECTOR, OFFICE OF ENERGY
PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION

INTRODUCTION

Mr. Chairman and Members of the Committee:

My name is J. Mark Robinson and I am the Director of the Office of Energy Projects at the Federal Energy Regulatory Commission (Commission). I appreciate the opportunity to appear before you to discuss the Commission's growing involvement with hydropower using new technologies. I use the term "new technologies" to mean mechanisms that produce hydropower from ocean currents, tides, and wave action, without the use of a dam. As a member of the Commission's staff, the views I express in this testimony are my own, and not those of the Commission or of any individual Commissioner.

The Commission regulates over 1,600 hydroelectric projects at over 2,500 dams pursuant to Part I of the Federal Power Act (FPA). Together, these projects represent 54 gigawatts of hydroelectric capacity, more than half of all the hydropower in the United States. Hydropower is an essential part of the Nation's energy mix and offers the benefits of an emission-free, renewable, domestic energy source with public and private capacity together totaling about nine percent of U.S. capacity. Today we are looking at development of a new source of hydropower that has the potential to add a substantial amount of power to the nation's generation capacity, perhaps one day doubling our total hydropower generation.

The Commission's existing procedures are well established and well suited to address this expansion of conventional hydropower with new technologies, and we are prepared to learn from experience in this rapidly evolving area and to make whatever regulatory adjustments are appropriate in order to help realize the potential of this renewable energy resource.

Before I present the Commission's regulatory program for new technology projects in more detail, I want to make two specific points regarding how these projects may affect the Outer Continental Shelf (or OCS). First, we expect that the majority of new technology projects will be located in state waters, not on the OCS. Of the 21 preliminary permit applications for ocean projects pending at the Commission as of May 31, 2007, three propose boundaries straddling the state-OCS line and only one would be located entirely on the OCS. The other 17 applications are for sites within state waters. This distribution of proposals reflects the cumulative costs of development, which include the costs associated with purchasing and installing transmission cable needed to bring project power onshore, making it advantageous to locate projects nearer to the shore. Second, for those projects located wholly or partially on the OCS, the Commission will work closely with the Minerals Management Service of the U.S. Department of the Interior (MMS), which has the responsibility to issue leases for these projects. Currently, in the spirit of cooperation and good government, we are working on a Memorandum of Understanding with MMS to weave the MMS and FERC processes together and eliminate redundancy for the benefit of applicants, other stakeholders, and the two agencies.

In my testimony I will describe 1) the strengths of the Commission's existing program and its compatibility with the new technologies, 2) the flexibility the Commission has exercised and alterations the Commission is making to its processes to address the concerns of stakeholders about specific aspects of that compatibility, and 3) the Commission's efforts to work with the MMS to establish an efficient program for new technology projects to be located outside state waters on the OCS.

OCEAN ENERGY ACTIVITY BEFORE THE COMMISSION

Applications for ocean-based hydropower projects can potentially go through three stages at the Commission. First, developers can apply for preliminary permits. Preliminary permits maintain priority of application for license for a site for up to three years while a developer researches site feasibility and makes financial arrangements. Second, developers can apply for a license to construct and operate a hydro-

power project. (A preliminary permit is not required prior to applying for a license.) By statute the Commission can issue a license for a term of up to 50 years. Third, if licensed, the developer must operate the project in compliance with the terms of the Commission's license order. Throughout the term of the license, the Commission monitors the project to assure compliance with the license.

Recently, the Commission has responded to a surge in applications for preliminary permits for the new technologies, including over 40 applications in 2006 alone. As of May 31, 2007, the Commission has issued 38 preliminary permits for new technology projects and requested further information regarding many of the others that are pending. None of the four issued wave permits fall on the OCS, nor of course do the 26 tidal energy permits. All eight preliminary permits issued for ocean current energy projects are proposed for the OCS. Unlike wave and tidal efforts, this energy source has not yet reached the prototype phase.

The Commission received the first license application for a wave energy hydropower project from AquaEnergy, Inc., now Finavera Renewables, in November 2006 and issued its environmental assessment in May 2007. The Makah Bay Offshore Wave Energy Project is proposed for Makah Bay in Clallam County, Washington. The project would consist of four buoys, which together would generate up to 1 megawatt (MW).

In the tidal hydropower arena, Commission staff has been working with Verdant Power, LLC, a permit holder seeking to develop a license application for the Roosevelt Island Tidal Energy Hydropower Project. The project ultimately would consist of as many as 200 free-flowing turbine generator units (about 10 MW total), located below the water surface in the East River in Queens County, New York.

Similarly, Commission staff has been working with Reedsport OPT Wave Park LLC and other stakeholders as they prepare a license application for a proposed wave energy project in Douglas County, Oregon. The proposal is for up to 200 buoys generating up to 50 MW.

COMPATIBILITY OF THE COMMISSION'S EXISTING PROCESS WITH THE NEW TECHNOLOGIES

Projects using new technologies are compatible with the Commission's well-tested regulatory process that has been refined continuously since the original passage of the Federal Water Power Act of 1920. Regulating the development of power generation from the nation's waters is a primary role of the Commission. We analyze developers' proposals for energy generation from navigable and Commerce Clause waters, along with interests expressed by other stakeholders. Ultimately, we seek to comprehensively balance the benefit of power generation with environmental protection and other values as directed by statute. After years of collaboration with other agencies and parties, we have achieved a high level of regulatory efficiency. We have improved our licensing process to include early engagement with the applicant and other stakeholders, earlier and more predictable study requirements, more certain time frames, and overall reduced processing time.

In reviewing a license application for a project, the Commission integrates and weighs the concerns of the licensee, federal and state resource agencies, Native American tribes, and members of the public. We do so through an information-gathering process and technical analysis that enables a fully informed Commission decision while complying with the mandates of the Federal Power Act, the National Environmental Policy Act, the Endangered Species Act, and other applicable laws. The National Marine Fisheries Service (NMFS), within the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce, is one federal agency that has been actively involved in the Commission's licensing process for conventional hydropower projects and we expect would be similarly involved in new technology projects.

Cooperation and consultation with the agencies begins early in application development and continues throughout the licensing process. The Commission requires that applicants consult with agencies and tribes in the preparation of a license application. Under the Federal Power Act, Congress assigned the state and federal fish and wildlife agencies specific authority in hydropower licensing. Essentially, the Commission is to accept state and federal fish and wildlife agency recommendations unless they clearly are in conflict with another part of the statute. These recommendations contribute to the comprehensive balancing of energy development and the protection of fish, wildlife, recreation, and other resources. Finally, the Commission's licensing process and supporting analysis incorporates other statutes in which Congress has given important authorities to the states such as the Coastal Zone Management Act of 1972 and the National Historic Preservation Act of 1966. Together, these statutory, regulatory, and informal relationships have supported

good coordination and cooperation with the agencies that will extend to the new technologies.

FLEXIBILITY TO ADAPT COMMISSION PROCESSES TO ACCOMMODATE THE NEW TECHNOLOGIES

While the Commission has a strong foundation for overseeing the orderly development of these new technologies, we also recognize the need to tailor the program to the characteristics of these new technologies. Within our established process, significant flexibility exists to apply innovative approaches when appropriate. For instance, in the Makah Bay and Roosevelt Island cases, Commission staff has allowed the use of different license processes that better fit the applicants' needs. This flexibility has enabled 1) the inclusion of Commission staff and stakeholders in the study development and implementation and 2) the development of much of the National Environmental Policy Act information in parallel with the project's license application development. In the Roosevelt Island case, the process may also encourage negotiation of a settlement.

In addition, the Commission has been proactive in addressing the new issues unique to this nascent industry. In 2005, as activity in the field of new hydropower technologies began to increase, the Commission's Office of Energy Projects formed a committee of technical and legal staff to initiate research on the regulatory, environmental, and developmental aspects of these new technologies. On December 6, 2006, the Commission hosted a technical conference to discuss the status of new technologies in hydroelectric generation from ocean waves, tides, and currents and from free-flowing rivers, and to explore the environmental, financial, and regulatory issues pertaining to the development of these technologies. Conference participants included ocean energy developers and consultants, trade associations, representatives from state and federal agencies, non-governmental organizations, and members of the public. Following the conference, the Commission solicited and received written comments from the participants.

In the case of experimental pilot projects the Commission has shown flexibility in the application of the statute. For example, the Commission determined that Verdant Power could install its six-turbine demonstration project in the East River without applying for a Commission license. In a July 27, 2005, Order on Clarification, the Commission concluded that Verdant's activities effectively would have no net impact on the interstate electric power grid or on interstate commerce. This determination established a policy that allows experimentation without a license when 1) the technology in question is experimental; 2) the proposed facilities are to be used for a short period and for the purpose of developing a hydropower license application; and 3) power generated from the test project will not be transmitted into, or displaced from, the national electric energy grid. In addition to testing power generation, Verdant will carry out extensive monitoring of fishery impacts as part of the experimental deployment. Although not required to be licensed during its testing phase, Verdant was of course obligated to obtain necessary approvals under other existing state and federal statutes. Staff continues to explore new ways to accommodate experimental pilot projects within the maximum flexibility allowed by statute.

In order to respond to industry concerns about the applicability of the existing preliminary permit system to new technology projects, the filing of a large number of recent applications for preliminary permits using "new technology", and to follow up on the Hydroelectric Infrastructure Technical Conference, the Commission on March 1, 2007, issued a notice in the Federal Register seeking comments on how the Commission should treat applications for and regulate preliminary permits for hydropower projects involving wave, current, and instream technologies. The notice set an interim policy for reviewing such applications, proposing to scrutinize them strictly by imposing requirements on any permits issued, such as the submission of progress reports, the development of study plans, and the establishment of deadlines to file a subsequent license application. Alternatives to the strict scrutiny policy include: (1) continuing the standard policy for processing applications for hydropower permits, by not subjecting them to extensive scrutiny and not imposing additional requirements on permit holders; or (2) declining to issue any preliminary permits for projects involving new technology, in which case applicants could only pursue such projects directly through the licensing process. Based on the comments received, the Commission is now deciding which of these options is in the public interest.

In the meantime, under the interim policy, the Commission is ensuring that permit holders are actively pursuing studies and consultations that may lead to development of a license application in hopes of preventing site-banking, the practice of

reserving potential project sites without intent to develop projects. The Commission also is processing preliminary permit applications with a view toward limiting the boundaries of the permits. This approach should provide a disincentive for developers to seek permits for projects that they are not ready to pursue.

WORKING WITH THE MINERALS MANAGEMENT SERVICE ON THE OCS

The Commission is committed to achieving a fair and predictable regulatory program that allows orderly development of new technology projects while considering environmental, recreational, cultural, and other uses of the resource. To address concerns about overlapping jurisdiction of the Commission and the MMS, both staff and Chairman Kelliher have met with representatives of the Department of the Interior. The two agencies have agreed to work together to develop a Memorandum of Understanding that will apply the best resources and authorities of both agencies to develop an efficient and effective program for regulating the development of hydropower in all offshore areas, including the OCS.

As we have learned in our MOU discussions, the Commission and the MMS bring complementary strengths to developing such a program. The Commission offers an existing and adaptable hydropower licensing program with the goal of ensuring that any project licensed will be best adapted to a comprehensive plan for development of the water resource in the public interest. This program would provide consistency across hydropower generation projects in state and federal waters including providing federal oversight for transmission of power from the project site to the electric grid. MMS offers an established set of tools for comprehensive planning for the development of the OCS and extensive leasing experience as a land management agency. Efficient use of the considerable resources of the two agencies could work to the benefit of all parties.

CONCLUSION

In closing, the Commissioners have stated publicly their interest in promoting the development of this potentially important source of renewable energy. They also have expressed their desire to reduce regulatory barriers to the development of new technologies, where possible.

We are confident that under the Commission's statutory structure, refined over almost a century, hydropower resources using new technologies can be developed in an orderly way while protecting other beneficial public uses, such as fish and wildlife, and meeting the requirements of other federal statutes and state interests. As experience is gained in the area of new hydropower technologies, we will make appropriate regulatory adjustments as we have in response to other technology changes in the past. We will work with the Minerals Management Service to develop a program for the OCS that makes the best and most efficient use of our respective resources and provides thorough analysis of environmental impacts, and we will continue to cooperate and consult with other federal agencies, including NMFS, and individual states in the licensing of new technology projects. We look forward to continuing to carry out the Congressional mandate in the Federal Power Act and performing our regulatory duties fairly, openly, and efficiently to realize the potential of this promising renewable energy resource.

That concludes my remarks and I would be pleased to answer any questions you may have.

The CHAIRMAN. Thank you very much.

Mr. Grainey, go right ahead.

STATEMENT OF MICHAEL W. GRAINEY, DIRECTOR, OREGON DEPARTMENT OF ENERGY, ON BEHALF OF GOVERNOR TED KULONGOSKI, SALEM, OR

Mr. GRAINEY. Thank you. Good morning, Mr. Chairman, members of the committee. Thank you for the opportunity to speak for Oregon Governor Ted Kulongowski.

Wave energy is a promising renewable resource, and Oregon has some of the best sites in the country. It is essential that the process for siting ocean resources be fair and timely.

Let me turn to the two questions I've been asked to address.

First, should the U.S. Minerals Management Service, MMS, or the Federal Energy Regulatory Commission, FERC, approve ocean

energy? Regardless of which agency is involved, the Federal role in ocean energy should be limited in scope and time, should recognize that ocean energy is different from dams and other instream hydroelectric facilities. The Federal role should not interfere with the State's traditional power to determine power plant siting. Rather than choose between agencies, we believe that any Federal agency Congress chooses should follow these principles. For example, Section 388(e) of the Energy Policy Act, which you mentioned previously, reversed State jurisdiction and other rights over submerged lands, subject to MMS's review. We support section 388(e), and similar language should apply to FERC for any role Congress provides FERC on ocean energy.

FERC has interpreted the Federal Power Act to include ocean and other wave energy projects as hydroelectric facilities under its jurisdiction, as you have heard. However, ocean energy facilities are not comparable to dams and other instream structures. They do not present navigability and other issues that instream structures raise. For example, Oregon law treats ocean energy different from hydroelectric facilities for State tax credits.

Nevertheless, we have worked with FERC staff to cooperate and coordinate our State review with FERC. We are willing to work in a similar fashion with MMS.

FERC held a workshop last year on wave energy. We commend FERC for publicly examining what its role should be, and for some initial steps it has proposed from that workshop. If Congress decides that FERC should play the lead role in ocean energy, we urge you to clearly provide that FERC should not treat ocean energy like dams. Instead, FERC's role should be consistent with the principles listed above, and State siting authority should be preserved.

This brings me to the second question: "What role should the States play in ocean energy facilities?". We believe that States should have the authority to decide whether to site ocean energy facilities within their territorial waters. Traditionally, States, not the Federal Government, have made the siting decisions on power plants. Ocean energy facilities are power plants. Ocean energy facilities are not instream dams, and do not present Federal Power Act issues raised by instream structures.

The State can address siting and environmental issues in a more timely fashion than either Federal agency, with less cost and expense to the developer and with more meaningful involvement by the public. Even with an expedited process, it could take up to 3 years or more for a Federal agency to make a final decision on an ocean energy application for full commercial operation on a large scale.

In contrast, Oregon's centralized process for siting large energy facilities takes less than 1 year from receipt of a complete application. Our process has sited thousands of megawatts of power plants, hundreds of miles of transmission lines, natural gas pipelines, and natural gas storage facilities with a public process which is accessible and convenient for our citizens. Our process has also denied energy projects which failed to meet Oregon's strict environmental standards.

Finally, our experience with the recent preemption of the State in siting liquified natural gas, or LNG, facilities has been that it

has taken more time, not less, to reach a decision, with a process which is more difficult for our citizens. I urge you not to take that path for ocean energy.

In conclusion, our beaches are public property, and Oregon law provides public access to all beaches to our citizens. The State has a fundamental interest in the use of the Oregon coast, and should make the primary decision on whether, and where, ocean energy power plants are sited on our coast. I've provided more details in my written statement on our process.

Thank you very much, Mr. Chairman.

[The prepared statement of Mr. Grainey follows:]

PREPARED STATEMENT OF MICHAEL W. GRAINEY, DIRECTOR, OREGON DEPARTMENT OF ENERGY, ON BEHALF OF GOVERNOR TED KULONGOSKI, SALEM, OR

Good morning, Chairman Bingaman, members of the Committee. Thank you for the opportunity to present this testimony on behalf of Governor Ted Kulongoski.

The Oregon Department of Energy is responsible for siting large energy facilities, including power plants, transmission lines, natural gas pipelines and natural gas storage facilities. The Department is also responsible for implementing the state's energy policy of promoting energy efficiency and renewable energy.

In 2005, Governor Kulongoski adopted a Renewable Energy Action Plan, to guide Oregon's energy future. The Plan contains more than 130 recommendations to increase the use and development of renewable energy in Oregon, including wave energy. These involve federal and state legislation, as well as actions agencies, businesses and individuals can take. Governor Kulongoski sent to the current session of the Oregon Legislature a comprehensive legislative package to implement that Plan, including over twenty measures in five bills. I have attached a summary of the Governor's legislative package for your information.

A key part of that policy is the recent adoption by our Legislature of Governor Kulongoski's Renewable Portfolio Standard, Senate Bill 838. That standard is one of the most aggressive in the nation. It requires that 25% of Oregon's total load come from new renewable energy by the year 2025. This means that virtually all of Oregon's load growth must be met by renewable energy.

This is a commitment the state is eager to make. But to do so we must have renewable resources that are available and can be sited efficiently. Wave energy is an emerging renewable technology and Oregon has some of the most promising sites in the entire country. Oregon has unique sites especially favorable for wave energy development based on its wave resource and access to coastal transmission. It is essential that the process for siting ocean resources be fair and timely.

Interest in wave energy in Oregon is high and is favorable in coastal communities, so long as development is done carefully and in a way that avoids adverse impacts on fishing, scenic vistas and recreational uses. Oregon has worked with industry, local officials, marine resource users such as crabbers and fishers, environmental groups and the general public, to create a consensus roadmap for developing wave energy.

Already four leading wave energy developers have received preliminary permits at several locations off the Oregon coast. Three more sites have permits pending. In addition, Oregon is a world leader in wave energy research, with the team led by Doctor Annette Von Jouanne at Oregon State University. Their research is helping to move wave energy from a promising technology to a commercially viable source of energy. As part of this work, Oregon State University has proposed to develop a National Wave Energy Center off the Oregon coast to test innovative wave energy devices. In fact, Oregon State is in the process of deploying a test device this summer off the coast of Newport.

Governor Kulongoski has made a commitment to ensure that Oregon leads the nation in the research and commercialization of wave energy development in the United States. In addition to the Renewable Portfolio Standard, initiatives of Governor Kulongoski on wave energy include:

- Creation of a new non-profit entity, the Oregon Wave Energy Trust, to spearhead efforts to develop a wave energy sector in Oregon, including a statewide environmental assessment, assist in streamlining the regulatory process, fund R&D efforts, and provide input for coastwide planning for wave energy sites supported by coastal communities.

- Designation of an Oregon Solutions project for the proposed project off the coast of Reedsport. That designation provides high priority involvement by the Governor's staff in a collaborative process involving all stakeholders, including affected citizens, local governments, interested industry, utilities, state agencies and others. The project goal is to develop consensus support for the first commercial wave energy project in the United States.
- \$5.2 million in the Governor's budget for the 2007-2009 biennium for additional research and development of wave energy.
- Expansion of the state's business energy tax credit to 50% on up to \$20 million investment. The tax credit applies both to wave energy generation projects as well as manufacture of technology and equipment used for wave energy devices.

With that context, let me turn to the two questions I have been asked to address.

Question 1. Should the US Minerals Management Service (MMS) or the Federal Energy Regulatory Commission (FERC) Have Federal Authority Over Ocean Facilities?

Answer. Regardless of which federal agency is involved, we believe that the federal role in ocean energy facilities should be limited in scope, complexity and timing. The federal role should be flexible, recognize the unique nature of ocean projects as compared to traditional river hydroelectric facilities, appropriately consider state standards, adequately address state interests, and be expeditious.

The federal role should not interfere with the state's traditional power to determine power plant siting, including within the state's territorial sea. The federal role should also not be duplicative of the state review and it should not interfere with the state review. Rather than choose between agencies, we believe that any agency Congress assigns responsibilities for a federal role in ocean energy facilities should follow these principles.

For example, Section 388(e) of the Energy Policy Act of 2005, which provides authority to MMS to grant proprietary authorizations (leases, easements and rights-of-way) for energy-related uses on the outer Continental Shelf (beyond the three-mile limit), explicitly recognizes and preserves state jurisdiction and other rights over any submerged lands subject to MMS's review. We support Section 388(e). Similar language should be included for any responsibility Congress gives FERC.

FERC has interpreted the Federal Power Act to include wave and other ocean energy projects as hydroelectric facilities under its jurisdiction, including those within the three-mile limit. These facilities are not comparable to dams and other in-stream structures. Nevertheless, we have engaged constructively with FERC staff to try to coordinate state reviews with FERC's asserted role. We are willing to work in a similar fashion with MMS for any duties Congress assigns to that agency.

FERC recognizes that ocean energy facilities present different issues than in stream hydroelectric facilities and held a workshop last December to examine these issues. We commend FERC for taking the initiative to publicly examine what its role would be and ways to address the unique nature of these ocean sites. Attached is the testimony I provided to FERC at that time.*

We are also pleased with some initial steps FERC has proposed in response to that workshop and we encourage FERC to act favorably on more of the suggestions made at that workshop. If Congress decides that FERC should play a role in ocean energy, we urge Congress to clearly direct that FERC should develop a process for ocean sites that recognizes the differences between ocean wave facilities and river hydroelectric facilities, particularly within the three-mile limit. In addition, FERC's scope of review and process should be consistent with the principles listed above.

Question 2. What role should the states play in ocean energy facilities?

Answer. States should have the authority to decide whether to site ocean energy facilities within their territorial waters. Traditionally, states, not the federal government, have made the siting decisions on power plants located in their states.

Ocean energy facilities are not like dams and other structures which may restrict navigation on navigable rivers. Ocean energy facilities are power plants, which use mechanical energy to generate electricity, and states should be allowed to apply their own coordination process to address any localized impacts of these facilities.

Section 388 of the Energy Policy Act of 2005, in providing MMS lead responsibility for federal leasing decisions, does not preempt the traditional role of the states in siting power plants. Instead, Section 388(e) explicitly preserves state authority to make siting and state leasing decisions. For example, Section 388(e) preserves not only Oregon's siting authority but also the authority of our Department of State Lands to issue state leases for activity on state property. We believe this approach makes sense, where federal and state agencies focus on their respective areas.

*Document has been retained in committee files.

Under Section 388(e) MMS makes leasing decisions outside of the three-mile limit, and the State makes power plant siting decisions and leasing decisions for state property.

If Congress agrees with FERC's assertion of jurisdiction over ocean energy facilities, we urge Congress to add language similar to Section 388(e) to apply to FERC.

The State can address siting and environmental issues in a more timely fashion than either FERC or MMS can, with less cost and expense to the developer and to the general public. Even with an expedited process it would probably take either federal agency up to three years to make a final decision on an ocean energy application for large scale commercial operation.

In contrast, Oregon's process for siting large energy facilities takes less than one year from receipt of a complete application. For large energy facilities, Oregon has a centralized state siting process in which the licensing decision is made by the state Energy Facility Siting Council. The Siting Council's review covers issues normally reviewed by other state and local agencies. The Siting Council's decision must be made in less than one year from the time a complete application is filed.

Oregon's process has successfully sited thousands of megawatts of power plants, hundreds of miles of transmission lines, natural gas pipelines and natural gas storage facilities, while providing a public process which is accessible and convenient for interested citizen. Our process has also denied applications for energy facilities which failed to meet Oregon's strict environmental standards. Oregon's process for siting large energy facilities works effectively for a wide variety of energy facilities. That process provides meaningful public input while resulting in a final decision in a timely manner.

For small energy facilities (less than 25 megawatts), Oregon has also established a process to coordinate review among state and local agencies called the Oregon Solutions process mentioned previously. The Oregon Solutions process operates parallel to state and local licensing and can shorten the licensing process by resolving issues early. It has been used successfully on a number of important environmental and energy issues in the last four years.

As mentioned previously, Governor Kulongoski has designated the Reedsport Wave Energy Project an Oregon Solutions project. That designation provides high priority involvement by the Governor's staff in a collaborative process involving all stakeholders, including affected citizens, local governments, interested industry, utilities, state agencies and others. This process allows the State to act more quickly and more flexibly than FERC to resolve issues for small ocean resources.

Our Legislature also recently passed House Bill 2925, which simplifies the process of siting test and research wave facilities, which are not generating electricity for sale to utilities.

Finally, our experience with federal preemption of the state in licensing liquefied natural gas facilities (LNG) is that the Energy Policy Act of 2005 has not shortened the process of reaching decisions. The state had nearly finished the first phase of its review of two LNG facilities when the state's coordinated siting process was preempted by other sections of the Energy Policy Act of 2005. The result caused confusion and delay to everyone involved. The record of LNG facilities and of hydro licensing shows that preemption of state siting is not necessarily the way to expedite decisions to site ocean energy.

CONCLUSION

Ocean energy facilities should be treated in the same way as other power plants that are reviewed through a coordinated state process. The federal role should be limited, streamlined and should not displace or preempt the State role. Section 388(e) of the Energy Policy Act provides a good approach that should apply to any federal agency involved in ocean energy facilities.

Oregon, along with other states, has a fundamental interest in the use of the territorial sea, as well as in the development of renewable energy resources. Oregon has a fair and efficient process ready to apply to siting ocean energy facilities, and there is no compelling reason why that system should not apply to ocean energy facilities.

Thank you very much.

ATTACHMENT.—ENERGY LEGISLATIVE PACKAGE FOR 2007

Provided below are summaries of Governor Kulongoski's energy legislative package.

SENATE BILL 838—RENEWABLE PORTFOLIO STANDARD (RPS)

Establishes a Renewable Portfolio Standard (RPS) for electricity. The bill requires that 25% of Oregon's electric load come from new renewable energy by 2025. The bill includes the following provisions:

1. The RPS requirement of 25% by 2025 applies to electric utilities and any electricity service suppliers that serve at least 3% of Oregon's electric load. This covers Oregon's three largest electric utilities with over 75% of Oregon's electric load. Depending on load growth, this will likely cover most of the new resources needed to meet these utilities' new load.
2. The RPS sets interim targets of 5% by 2011, 15% by 2015 and 20% by 2020.
3. Oregon's 31 smallest consumer-owned utilities that serve less than 1.5% of Oregon's electric load are exempt from the 25% standard but must meet 5% of their load from new renewable energy by 2025. Utilities which serve between 1.5% and 3% of Oregon's load must meet 10% of their load from new renewable energy by 2025.
4. Eligible renewable resources include wind, solar, ocean, geothermal, biomass, hydropower and other renewable resources that were operational after January 1, 1995. Eligible generating facilities do not have to be located in Oregon but at least 80% of the electricity from these resources must serve Oregon loads.
5. No utility will be required to give up access to low-cost firm power from BPA or low-cost hydro contracts with the Mid-Columbia dams owned by Washington PUDs.
6. The RPS is not expected to increase rates; but a cost cap is built in as a backstop to limit any possible cost impact.
7. Compliance with the RPS can occur by owning eligible resources, by buying the output of resources developed by others, or by acquiring a limited number of unbundled Renewable Energy Certificates.
8. The public purpose charge is extended through 2025. Use of the renewable energy portion of the public purpose charge is limited to small-scale renewable energy projects 20 megawatts or less to encourage a diversity of the types of renewable energy resources developed.
9. There is a non-binding goal that one-third of the renewable energy resources will be small-scale renewable energy projects.

HOUSE BILL 2210—BIOFUELS FUELS PACKAGE

Provides a package of measures to encourage greater development, distribution and use of agricultural and forest material for biofuels, for electricity and for other forms of biomass energy use. The bill includes the following provisions:

1. Expands property tax incentives for biofuel and certain fuel additive production facilities.
2. Establishes a new tax credit for producers and collectors of biofuel raw materials, based on BTU content of feedstock.
3. Establishes a Renewable Fuel Standard for biodiesel and ethanol based on in-state production.
4. Prohibits the sale of gasoline that contains MTBE and certain other additives.
5. Provides mandate on State agencies regarding biodiesel for backup power generation.
6. Creates an income tax credit for consumer use of biofuel.
7. Modifies the site certificate exemption criteria for ethanol and biodiesel production facilities to preclude coal-fueled facilities.
8. Maintains exclusive farm use (EFU) status for on-farm biofuel production facilities.

HOUSE BILL 2211—BUSINESS ENERGY TAX CREDIT (BETC) CHANGES

The Business Energy Tax Credit is amended to provide greater incentives for renewable energy including the following:

1. Increases credit for renewable energy systems installed by businesses from 35% to 50% and increases the project cost limit from \$10 million to \$20 million.
2. Provides that the costs of constructing facilities to manufacture renewable energy systems and components are eligible for the increased tax credit for renewable energy.

3. Repeals the offset for federal tax credits for BETC projects that also receive a federal credit.
4. Provides an incentive to builders of high performance homes that reduce purchased energy use to near zero on an annual basis.
5. Make combined heat and power projects (CHP) eligible for the increased tax credit.
6. Increases the size of hydro projects eligible for BETC from 1 megawatt to 10 megawatts for hydro projects meeting state and federal requirements for fish and wildlife.
7. Makes homebuilders eligible for installation of renewable energy systems in new homes but at the value of the Residential Energy Tax Credit.
8. Applies to projects receiving final certification after 1/1/07.

HOUSE BILL 2212—RESIDENTIAL ENERGY TAX CREDIT (RETC) CHANGES

Makes the incentives for renewable energy more effective the following changes:

1. Allows use of the RETC for more than one qualifying item in the same year, e.g. for a solar water heater and for a solar electric system, and/or for multiple energy-efficient appliances.
2. Increases the maximum tax credit for fuel cells and for wind generation, similar to the increase in solar electric systems passed in 2005, from \$1,500 to \$6,000 over four years.
3. Effective date is 1/1/07.

The CHAIRMAN. Thank you all very much.

Let me just ask a question or two, and then defer to Senator Domenici and Senator Craig.

First, Steve, let me ask you—you indicated that there's a process in place between your agency and FERC to try to have a memorandum of understanding as to who's responsible for what. Do you have a clear idea that you could explain to me as to what you see your job as, versus what you think FERC's job should be? What are you trying to ensure has been considered before you sign off on one of these projects? What do you believe FERC needs to be sure has been considered?

Mr. ALLRED. Mr. Chairman, I would be glad to.

The things that we are concerned about with regard to the OCS, that we assure, as we go forward on alternative energy projects, are very similar to those that we would be concerned about as we look at oil and gas development. These are large structures. They are anchored to the floor of the ocean. If you remember, a significant amount of the damage during Katrina occurred when these structures broke loose. So, the anchoring and the engineering that goes into those structures is very important to us, to make sure that we have standards, and that it's done correctly.

The CHAIRMAN. That is for the safety of the people who use the high seas? It's a little different, in the sense that there is not going to be any escape of wind, like there would be of oil or gas, if you had some kind of a hurricane come through and upend a facility.

Mr. ALLRED. Mr. Chairman, a lot of it will depend on how these structures are constructed. They're engineered, of course, but the safety I'm talking about is when one of them breaks loose, and they are like a guided missile, as we saw in Katrina. Most of the areas where these will occur are areas for example, in wind, where there are high winds. That's the reason for them.

The second concern we have is marine mammals. Again, when we go offshore, it is the agency's concern, and mine, that we not affect marine mammals, and that we do these things in an environ-

mentally sound manner. I think that's worked out well on the oil and gas, in the standards that we have there.

The other issue we have to deal with, with FERC, is, while they issue a preliminary permit, as you remember, the law you passed requires us to provide leasing opportunities on a competitive basis. So, we have to deal with the situation where someone who may be spending lots of effort and lots of money in developing one of these projects may not be the one, under a competitive process, who ends up with the lease.

So, we've got to provide a mechanism on the OCS where our processes, and those of FERC, align so that we are not putting people at risk of spending lots of money, and then not being able to proceed. That can be done, I'm confident.

We have no desire to develop electrical transmission capability within Minerals Management Service, and that's where we believe that FERC, in whatever role, has to play a part.

The CHAIRMAN. Mr. Robinson, let me ask you if you could, sort of, answer the same question. How do you see the division of jurisdiction, or the separation of concerns, maybe, is what I'm trying to understand a little better. Are there things that you are focused on, related to the electric grid, that are distinct from what MMS has to do, or do you do some of the same things that they're doing? Or how do you see that?

Mr. ROBINSON. I think we share a lot of the same concerns. Certainly, we've placed over 1,400 miles of pipeline offshore, over \$3.3 billion worth of investment; and there, we have the same concerns with mammals, transportation safety, navigation. We work very closely with all the agencies that also share those concerns, including mitigative measures and authorizations to ensure protection of all those resources.

Specifically with MMS, there's a three-step process that they go through: their leasing, their studies, and their authorization to construct. What we're trying to do through that MOU is to make sure that, as the Assistant Secretary said, we don't overlap each other, or overburden each other. As an example, one of the discussions we're having is, in that first phase of their process, when they're doing the leasing, does it really make sense for the Commission to issue preliminary permits under those kinds of conditions? One of the things that might come out of an MOU is the deferral of the preliminary permit process to the leasing process. But that's only one phase. We have very specific administrative things to work out in all three phases.

The CHAIRMAN. So, your thought is, perhaps, at least, it would be appropriate, first, for a person to go to MMS and get a lease, and then come to you to get a permit, or to do the permit—the study—preliminary study.

Mr. ROBINSON. That's certainly one model, where the lease is taken care of, and then we go into the authorization to construct, and the Commission would have a role there.

The CHAIRMAN. OK.

Senator Domenici.

Senator DOMENICI. Mr. Robinson, FERC has issued 38 preliminary permits for these new ocean wave technology projects. To

what extent, if any, is NOAA involved? How is FERC coordinating with the States?

Mr. ROBINSON. NOAA is very deeply involved in everything we're doing here, for obvious reasons. They have statutory authority under the Endangered Species Act, and so we work with them very closely. In fact, we've just initiated some discussions with NOAA about how we can work with them in a fashion to allow experimental projects to go forward more quickly and not necessarily have to go through the entire licensing process. As far as the States go, the same applies. We work with the States, from the very beginning when we're informed of a project, to see what the State concerns are, and issues, and to try to get them to initiate their own permitting and authorization processes, which we depend on. So, we work very closely with both National Marine Fishery Service and the State in these projects.

Senator DOMENICI. Mr. Chairman, I believe I'll save my questions for the next panel.

The CHAIRMAN. All right.

Senator Salazar.

Senator SALAZAR. Thank you very much, Senator Bingaman.

I have a question to Assistant Secretary Allred, and to Mark Robinson.

The potential for wind energy in the off-coast areas of the U.S. is obviously great, from the information that we have received. When you look at the statistics about how much wind energy is being produced offshore in places like Denmark, they are way, way ahead of the United States of America. What is your view of what we are doing that might accelerate what we do with respect to wind energy offshore?

Mr. ALLRED. Mr. Chairman, Senator, I think there's a huge potential, as you have indicated, to develop these projects offshore. There are a lot of technical challenges in doing that, as you can imagine. These will not be without controversy. The first two projects, what I call the legacy projects that you asked us to proceed on under EPAct, are tremendously controversial.

Senator SALAZAR. But are the controversial issues relating to the esthetics, or are there environmental issues associated with the controversy? What's the problem?

Mr. ALLRED. These are not simple questions, but I think the biggest concern is that there's a visual impact. There is a concern about their impact on wildlife, on birds. There also have been a number of things enunciated by those who are opposed to those projects. That being said, we will work through that, just like we do with projects onshore. I think there's tremendous potential. I think there are some tweaks probably required with the Act. One of them has to do with putting out met towers. The Act, as it was written, didn't contemplate an ability to put out a short-term met tower in order to gather data, for example. We think—and we've been working with the committee staff—there needs to be a change, perhaps, there to make that much easier so someone can gather data very quickly.

Senator SALAZAR. Are there any regulatory or legal changes to the 2005 EPAct that might make it easier to develop the wind energy resources offshore?

Mr. ALLRED. In our discussions, Senator, with the committee staff, we have identified that specific one, I think, that would be best handled by an addition or a technical amendment to the Act. It's really only a technical amendment, it has very little impact. But it would quickly accelerate the ability to go out and find out where the best spots are.

Senator SALAZAR. Mr. Robinson.

Mr. ROBINSON. Senator, we don't have any statutory authority for the siting of wind energy, and so we really don't have a role in that area.

Senator SALAZAR. OK.

Mr. Allred, the question related, then, to wave energy—and I don't know if some of the other witnesses could comment on that—how—what is the potential of that? We see the energy that comes through waves in our oceans. How far along is the technology, in terms of being able to capture wave energy?

Mr. ALLRED. Senator, I—just given the amount of interest that has been generated, for example, over the issue of jurisdiction—certainly think that we're going to see applications and projects. Now, obviously, the economics of those with respect to other power sources will determine, really, whether they go forward. But we certainly are going to be prepared to go forward and to do what we can to accelerate any of these technologies, along with the other agencies.

Senator SALAZAR. Michael Grainey—from your point of view in Oregon, as the director of the Department of Energy for Oregon—what do you see the potential for both wind and wave energy?

Mr. GRAINEY. Senator, they're both very great. Wind energy is commercially viable now in Oregon. We have operating over 500 megawatts of wind power, another 1,000 megawatts have been approved, and another 1,000 megawatts are pending in our siting process. None of those are offshore. We've had no interest, by developers, in offshore wind, and I think that's because we have such good sites inland, in rural farming areas, where they've been readily accepted, with no controversy.

Senator SALAZAR. So, there hasn't been controversy with these 1,000 megawatts of development on wind energy?

Mr. GRAINEY. Not at all. There's only one site, recently, that was applied for, a small site, that's near a sensitive—visually sensitive area, that's raised some controversy.

Senator SALAZAR. How about wave energy? Anything going down there?

Mr. GRAINEY. For wave energy, again, the potential is very large. We estimate that nearly 5,000 megawatts of wave energy could be developed off the Oregon coast. That's as much as our entire electric load. Now, that will take time, and the costs for wave energy are still significantly higher than other energy. But, as we saw with wind energy, those costs can come down quickly, and the technology is improving. I think, within 10 years or less, we will see significant commercial development off the Oregon coast.

Senator SALAZAR. Thank you very much, Mr. Grainey.

Thank you all.

The CHAIRMAN. Senator Murkowski.

Senator MURKOWSKI. Thank you, Mr. Chairman.

Well, it's good to hear the general level of enthusiasm for ocean energy. We've got about one-fifth of the coastline of the United States up north, and we think that there is enormous potential for ocean energy, tidal energy. We've got a couple of different projects that are being looked at, and we believe that there's great opportunity there.

I apologize if I ask a question that has already been answered prior to my arrival here at committee this morning, but this is directed to you, Secretary Allred, and to you, Mr. Robinson. In your written testimony, you both say that FERC and MMS are making progress in working out this memorandum of understanding to share the authority, but I want to know whether, in fact, that is truly the case, or whether we need to, by statute, clarify EPAct. I know that when EPAct was before us, and I voted for it, I intended to give MMS some ability to provide for the comprehensive planning so that the oil and gas leasing in OCS would not be negatively impacted by the siting of other energy projects. But I didn't intend to have FERC cut out of the reviewing, and, being the approving agency for wind and ocean energy, electric projects, particularly since FERC has shown its ability to approve these projects in a relatively timely manner.

So, my question to you is whether or not Congress needs to revisit this issue.

Secretary Allred.

Mr. ALLRED. Senator, just my own personal philosophy is that you ought to make your laws as clear as they possibly can be; but—

Senator MURKOWSKI. We would agree.

Mr. ALLRED [continuing]. But, saying that, when I became Assistant Secretary and saw what was going on, on this issue, and the controversy that was happening, that was counterproductive to both agencies. So, I decided to approach FERC about sitting down and working out a way where we combine our processes, and make it simple to carry out our responsibilities. I think we're getting there. The last version—it may be the first that we've traded, I don't know how many have been passed back and forth—but we recently provided a draft to FERC. I personally reviewed that, and I think it's something that will work, and I look forward to their response. The last thing I want is two Federal agencies competing in a way that makes the development of this resource undesirable or uncompetitive. But I also want to make sure that we don't duplicate responsibilities. We have no intention, at Interior, of developing the kinds of expertise that FERC has on the electrical transmission side, and we believe that we bring to it, because of the vast experience that we have in the OCS and other energy sources, a tremendous amount of knowledge on how to site and design these facilities, and on how to protect the marine environment. We, for example, spent over \$780 million in oceanographic and environmental studies on the OCS. That's critical, I think, to having that knowledge, and to combining the knowledge into a single process. We cannot afford two separate processes.

Senator MURKOWSKI. Mr. Robinson, what do you think, do we need a statutory clarification?

Mr. ROBINSON. Not at this time, Senator. I think that we are making good progress on the MOU. At FERC, we're very used to working with a number of agencies in a shared decisionmaking mode. I think that, as our experience in that area becomes more apparent to MMS, a lot of the issues that we have right now that still remain will be ironed out. We still are hopeful for an early summer MOU to make this all happen.

One of the point, as I said earlier, the majority of this type of work will probably occur inside the OCS, in any case. The vast majority of our permits, and the one license that we're working on, are all in the first 3 miles outside of the OCS. I think that experience that we're gaining right now in licensing projects will ultimately serve the purposes of both FERC and MMS as we move into the OCS.

Senator MURKOWSKI. Well, if progress with the MOU falls apart, we'd like to know about it. So, thank you for your answer.

The CHAIRMAN. Senator Craig.

Senator CRAIG. Thank you very much, Mr. Chairman.

In all of our wisdom, sometimes we paint in gray. Now, having done that, Mr. Chairman, in EPAct, I find myself in the very interesting situation—you've heard the old phrase, "Steve is a friend, and Mark is a friend, and I'm for my friends"? It is very clear to me that both FERC and MMS have unique talents and unique specialties, and neither one should develop the others.

So, carry the discussion on, if you would, Steve and Mark, of the kind that you were having with the Senator from Alaska as to where we get in memorandums of understanding that clearly lay out a process and a procedure and a relationship that does not deter, slow down, or bureaucratize the process at hand. When I look at this, and I see MMS's jurisdiction in oil and gas resource production, and all of the talents there, and FERC clearly has jurisdiction in licensing of power and hydro, and now we're taking that out into the ocean, it seems to me there's some common ground for both, and that we shouldn't shift full responsibility and unique talents from one to the other, or vice versa.

So, carry us forward in the next iteration of, and how far along are you, and if this is a truly cooperative environment that you are now working in.

Mr. ALLRED. Senator Craig, we don't have comments back on the first draft that we have, but, at least our desire within MMS, and I believe that in FERC, is to find a way to solve this issue and to, more importantly, come up with a process that does not add delays, and hopefully will shorten the time by which we can develop these energy resources.

There are always turf issues. I'm realistic, particularly here in Washington, DC, in understanding that. We have to work through them, and we're committed to do it.

Senator CRAIG. Mark.

Mr. ROBINSON. If you look at this—and we've had about a month and a half of discussion now, and there has been an exchange of a number of ideas on how we can coordinate our processes. There's really three steps involved:

First is the leasing step. We have no expertise there, and we have no desire to get involved with that.

The second is the studies step. The winner of the lease, the leaseholder, is responsible for doing studies in the OCS to determine what the impacts might be of any kind of placement. There, I think that in our discussions it's clear that MMS would take a lead there, we would support, in that second phase.

The third phase is the authorization to construct. That's where we do have a lot of expertise, in terms of conditioning the construction, the operation, the maintenance of facilities. Then, we inspect those facilities and have the ability to penalize if somebody violates a condition that we place in that authorization. I think that's where we bring a lot of expertise, and we would like to work with MMS on how we can do that third phase, after they've conducted the first, we've cooperated on the second, and then we need to cooperate on the third to get projects built and constructed in the right way. That's more or less where we stand right now.

Senator CRAIG. Are either of you suggesting or proposing or thinking that Congress ought to clarify or in some way repropose? Both of you.

Steve.

Mr. ALLRED. Well, again, let me go back and qualify my answer by the fact that my personal philosophy is, to the best we can, things shouldn't be gray, because it's not the Federal agencies that will take advantage of those, it is those who want to oppose a project. Having said that, we were—before this issue came before you—already proceeding to try to work this out. As you know, these kinds of questions occur a lot, and have occurred a lot. My attitude is, they should not get in the way of doing our job. Given your decision, whether you choose to take additional legislative action or not, we will find a way to work with it. We were on the path, given the current grayness, as you call it, to make sure that we have that path—that clear path forward.

So, if you choose to clarify this issue, we'll work with FERC. If you choose that we work it out by ourselves, we will do it. I think it'll work well. The only issue that I caution you on is that when the questions come up, it won't be between Federal agencies, it'll be someone, probably, in the court system, as you know, that, if there were any difficulty in that grayness, that that's where we'll see it.

Mr. ROBINSON. Senator, I don't think so. We work with the Forest Service in siting hydroelectric projects on Forest Service lands. We work with the Bureau of Reclamation in siting hydroelectric projects on their land. We even work with the Corps of Engineers in siting hydroelectric projects on their dams. So, we have a lot of experience working with other agencies that have a significant regulatory role in the facilities that we authorize. So, I don't think we need new legislation. I think we just need to work with a new partner, and that's going—I believe—in the right direction.

Senator CRAIG. Mr. Chairman, thank you for the time. Let me ask one last question, then.

If the statute is gray, but you're coming together to establish a memorandum of understanding that develops certain specificities as to who's on first, who's on second, if you will, do you then, Steve, see that as a risk in the courts, or have memorandums of understanding and relationships developed by memorandums of under-

standing been clear enough to withstand those—the tests that you're concerned about?

Mr. ALLRED. Senator, we need to make sure that we do that, to the extent that we can. No matter what we do, there's a risk in the courts, as you know.

Senator CRAIG. With anything we do——

[Laughter.]

Mr. ALLRED. With anything that you do.

Senator CRAIG [continuing]. Let alone what you do.

Mr. ALLRED. So, we have that risk, and I think that the more we can do to clarify that, either as participants in a memorandum of understanding, which I think we contemplate would be reflected in rules, perhaps joint rules, in order to try to deal more with this issue.

But this is a new technology and a new application as we go offshore, and there will be tests. We need to prepare for them.

Senator CRAIG. Thank you both. Mr. Grainey, thank you.

The CHAIRMAN. Let me ask a question, and then—Senator Landrieu hasn't had a chance to ask her questions.

But, let me, first, just confess that when we did EPOA, it never occurred to me that FERC had authority as to the siting of these projects in the OCS. It wasn't something that I was aware of. I believe, Mr. Robinson, you said that FERC has no jurisdiction as to the siting of any wind project in the OCS. You do have siting, as you read the law, or authority over siting, of hydroelectric projects because of the hydroelectric licensing authority that you have, generally. I don't really understand why it's very logical for us to say to FERC, "You don't have authority with regard to siting of wind projects in the OCS, you do have authority with regard to siting of hydroelectric projects in the OCS." It would make more sense, it seems to me, just as a matter of logic, to say, "Look, the siting issues will be determined by MMS. The question about, you know, the hooking it up to the grid and compliance with all of those factors, that's something that FERC is clearly capable of, and expert on, and ought to be involved in." What's your thought as to that?

Mr. ROBINSON. Well, Senator, it wasn't that EPOA said the Commission has no authority in siting wind in the OCS. It's that the Federal Power Act always gave the Commission authority to site hydroelectric projects in navigable waters that—where Commerce Clause—or Commerce Clause waters, where they're connected to the grid. Under that definition, which has been there since 1920, these projects are hydroelectric projects—they produce electricity using hydropower—they fall under the Federal Power Act. There are exclusions that were specifically laid out in EPOA 2005 on the authorities of MMS to site energy projects in the OCS which allowed the Commission to maintain that authority, which it's always had, for siting hydropower projects in the OCS or in waters 12 miles and in.

I think the first tidal power project that I worked on at the Commission was back in the early 1980s. This is not something—when there was a thought, back then, that maybe tidal power was an economic way to generate electricity. That died off at that time, and we're revisiting it now, but we've had that authority since 1920.

The CHAIRMAN. OK.

Senator Landrieu.

Senator LANDRIEU. I'm going to pass with questions, but I thank the chairman for calling this hearing, because it is something that we need to resolve and move forward, because I think the potential and opportunities in our waters are very significant. So, I will submit questions later, but I'm just here to listen.

Thank you.

The CHAIRMAN. Thank you.

We have two votes, starting in about 5 minutes. I guess I would be inclined to go ahead and dismiss this panel and bring the second panel forward, unless, Senator Smith, you wanted to ask some questions before we do that.

Senator SMITH. Just to welcome Mr. Grainey and I appreciate your coming here.

Mr. GRAINEY. Thank you, Senator.

Senator SMITH. I'll submit a question for the record, Mr. Chairman.

The CHAIRMAN. All right, thank you.

The CHAIRMAN. Thank you all for testifying. Why don't we ask the second panel to come forward, and maybe we can get their testimony in before we have to run to do these two votes.

We have two statements for the record that I'm just going to include. One is from Nathanael Greene, the senior policy analyst with the Natural Resources Defense Council, and the other is by Diane Regas, who is the managing director of the Oceans Program for Environmental Defense. Both of those statements will be included as part of our committee record.

The CHAIRMAN. Why don't we start—Jason Bak is the CEO of Finavera—is that the correct pronunciation?

Mr. BAK. Finavera.

The CHAIRMAN. Finavera—Finavera Renewables, Inc., in Vancouver, British Columbia; Jamie Steve is the legislative director for the American Wind Energy Association, here in Washington.

We thank you both for being here. Jason, why don't you start, and then Mr. Steve.

STATEMENT OF JASON BAK, CEO, FINAVERA RENEWABLES, INC., VANCOUVER, BRITISH COLUMBIA

Mr. BAK. Thank you, Mr. Chairman and members of the committee, for inviting me to testify.

Let me, again, start by thanking you, once again, and the specific members who have been champions of renewable energy for many, many years, Senator Murkowski, Senator Smith, all of whom have provided great leadership for the renewable energy industry, and we're very grateful for your support.

Although I'm here in my role as CEO of Finavera Renewables, I can tell you that we've spoken with a number of the other leading wave energy developers in America, and they share some of our concerns that I'm going to outline today.

We're very concerned about the negative effects of the dispute between FERC and MMS, and the over-regulation of wave, current, and tidal energy projects within the Federal Outer Continental Shelf. Our industry will simply not develop projects on the OCS

until the dispute is resolved. Even then, if the resolution to the dispute leads to a duplicate of burdensome and inefficient Federal decisionmaking process, we will not use the OCS for our projects. Projects there will simply be too difficult to finance with that risk.

We will be compelled to stay in State waters, which hold a fantastic promise for wave energy, but will not tap potentially valuable renewable energy resources in the Federal waters. User conflicts will become more likely because we're constrained to a smaller space. Any hope for Federal royalties or fees will not materialize.

One of the worst cases that we envision is if Congress were to do anything to cast uncertainty on FERC's licensing authority, since we and others are actively pursuing projects right now pursuant to the Federal Power Act process. We urge you to reinforce the Commission's authority.

In saying that, we don't believe that we're asking you to weaken MMS's authority or ability to carry out its mission, under section 388 or otherwise. MMS is the landlord and has clear power to set lease terms. Moreover, as I understand it, the Interior Department has authority to set conditions on Federal hydropower licenses.

I suspect that MMS may not be as familiar with the process as the Fish and Wildlife Service, but that doesn't mean that that authority is unavailable to them, and it certainly doesn't justify the creation of any redundant licensing regime. I think myself and the others who have testified so far have said, "Keep it simple."

In other words, we think this dispute is unnecessary. We know it's destructive. We hope that it can be addressed promptly.

I'd like to respond to the testimony from our good friends at the State of Oregon. I mean it. Oregon has been a tremendous ally to the wave energy industry. My written testimony outlines the many steps that Oregon has taken to attract the jobs and the investment dollars that our industry can provide as we grow and succeed, and we're taking international funds and domestic funds, and funneling them into Oregon to really push the industry forward. That comes with the creation of jobs and a number of other benefits for the State.

We respect and understand the Governor's call to let the State carry primary responsibility for licensing projects in State waters. We share the Governor's desire to apply a simple, efficient process to project licensing. Yet, we do not want to make the ideal the enemy of the good by inviting a constitutional dispute between Federal and State governments.

In our view, FERC should administer its integrated licensing process in a way that rewards and encourages those States that step forward, as Oregon has done, to take responsibility for the hard work of stakeholder engagement, issue identification, and problem solving required to develop a renewable energy project or program with broad public support.

We see no reason why FERC cannot, under its existing authority, grant broad deference to license applications developed through State-led procedures that are inclusive, transparent, and comprehensive. In fact, we view FERC's style and level of involvement in our Oregon projects, and the others that we follow, to represent exactly that kind of flexible approach.

We believe that State-level initiatives in FERC—the FERC process can actually complement each other to the benefit of our industry and the public interests in offshore developments.

Thank you for giving me a chance to appear here today. I would ask that my full statement be included in the record, and I'm happy to respond to any questions.

[The prepared statement of Mr. Bak follows:]

PREPARED STATEMENT OF JASON BAK, CEO, FINAVERA RENEWABLES, INC.,
VANCOUVER, BRITISH COLUMBIA

Mr. Chairman and Members of the Committee, thank you for the privilege of allowing me to testify before you.

I am the CEO of Finavera Renewables. We are an energy company focused solely on development, ownership and operation of renewable energy projects around the world. Although we are developing 1500 megawatts of wind energy in Canada and Ireland, my company is represented here today because we are at the cutting edge of ocean wave energy in the United States through our U.S. subsidiary, Finavera Renewables Ocean Energy.

We have three wave energy projects under development in California, Oregon, and Washington, and we are in discussions about others. These are real projects. United States steelworkers are at work today constructing our prototype wave energy buoy, which we are going to install off the coast of Newport, Oregon this summer. Our Makah Bay project is the first, and so far only, wave energy project to apply for a federal operating license. We are leaders in an industry that is already creating jobs and is poised to bring clean electricity, desalination, and, in time, hydrogen fuel to the American economy.

I wish to begin by thanking the Chairman and the members of this Committee who have been champions of renewable energy for many years. I would also like to thank Senator Cantwell, Senator Smith, Senator Wyden, and Senator Murkowski who have provided important leadership for the ocean wave, tidal and current energy industry.

My purpose in testifying today is to describe two problems in existing law that create substantial regulatory risk for the ocean wave energy industry. Each problem is rooted in disagreement over the Federal Energy Regulatory Commission's authority under the Federal Power Act to license ocean wave, tidal, or current energy projects, but they have been brought into focus by disputes over the meaning of Section 388 of the Energy Policy Act.

To begin, there is disagreement on the question whether FERC's hydropower licensing authority is confined to traditional in-river, freshwater hydropower projects or whether it also extends to non-traditional hydropower projects, such as wave, tidal or current energy projects, located in marine areas.

This question first arose in 2001, when Aqua Energy, a company that Finavera acquired last year, proposed the Makah Bay wave energy project. Our position at the time was that FERC's authority did not extend to our project. FERC, NOAA and other parties disagreed.

Aqua Energy ultimately acquiesced to FERC's assertion of jurisdiction and, in fact, we have been extremely pleased with the process and FERC's use of its authority.

The legal issue has been dormant; it has not been litigated or otherwise vigorously tested. It is, nevertheless, a latent uncertainty that presents real regulatory and litigation risk. It is an important enough matter that the legislature of the State of Oregon, which is moving aggressively to promote wave energy development and investment, recently petitioned Congress to address the issue by affirming FERC's authority. I have attached a copy of that petition to my testimony for your consideration.*

The second matter of concern arises because the Minerals Management Service of the Department of the Interior has asserted that, while FERC may or may not have authority under the Federal Power Act to license non-traditional hydropower projects located in state jurisdictional ocean areas, it lacks authority over projects located on the federal outer continental shelf ("OCS"). MMS contends that Section 388 of the Energy Policy Act of 2005 gave MMS exclusive authority to regulate wave, tidal, or current energy projects on the OCS. This point of disagreement was created by the particular language of Section 388, which grants MMS broad leasing

* Document retained in committee files.

and other authorities for renewable energy projects on the OCS, but includes “savings” provisions for existing law and agency authorities. MMS’s position is, essentially, that FERC had no authority under the Federal Power Act to license projects on the OCS, so no such authority was “saved” by the savings clauses. FERC and others disagree.

This dispute over OCS jurisdiction is a matter of particular concern to the ocean wave energy industry because our technologies are well suited for offshore areas, including the OCS, while tidal and current energy projects are, for the time being at least, likely to be located closer to shore.

To boil it down, the question facing us is whether FERC’s Federal Power Act hydropower licensing authority extends offshore and, if it does, whether the authority ends at the boundary of the OCS.

This Committee has jurisdiction over every relevant aspect of the problem.

The Federal Power Act and Section 388 can be read—and we believe they should be read—in a way that avoids conflict.

In our view, the proper interpretation of existing law, and the proper resolution of the current disagreement, would place FERC squarely in the lead for the purpose of licensing our projects wherever located. And MMS would have clear authority to convey leases or other proprietary rights on the OCS, just as states have authority to issue leases or other proprietary rights in state waters. FERC should be the principal regulator, and MMS should be the federal landlord. As we see it, the agencies both play very substantial, complementary roles with regard to use of the OCS. Neither agency’s mission need be subordinated to that of the other.

We do not mean to oversimplify the relationship; we understand that the boundary dividing the two sets of responsibilities is not absolute. The agencies’ respective roles are inextricably intertwined. For example, under the Federal Power Act, the Interior Department (along with other federal agencies, states, tribes, and stakeholders) has substantial rights to participate in FERC license proceedings and to set conditions for the projects. The agencies must cooperate.

Rather than ask the Committee to approach this issue purely as a matter of statutory interpretation, we urge you also to take into account four key policy concerns and to act to clarify existing law with these policy considerations in mind.

First, the ocean hydropower industry is already heavily invested in the FERC hydropower licensing process. Finavera and other companies have literally built major components of our U.S. business models around the substantive and procedural characteristics of the FERC licensing process. We have also spent millions of dollars, and are poised to spend many millions more, on the studies, consultations, analyses, monitoring and other efforts dictated by the FERC procedures.

It is important to emphasize our view that FERC’s licensing process, especially the new integrated licensing process, provides an appropriately comprehensive, yet flexible mechanism for identifying and addressing the public values potentially implicated by ocean wave energy projects, including environmental concerns and use conflicts.

There is empirical evidence for this position. When we filed our application for a FERC license for the Makah Bay project, literally dozens of stakeholder parties filed comments. Every commentator supported the project, provided we develop and implement a strong monitoring and evaluation program, which we will do. In other words, the FERC process works well enough to resolve the stakeholder interests, and the developer’s interests, in a first-ever ocean energy project sited in a marine sanctuary adjacent to fiercely protected natural areas. We expect to receive a license within the year.

Second, it would be truly devastating to our existing projects and the prospects for our industry if Congress were to remove FERC from its role as ocean hydropower regulator. There is no other federal agency with a regulatory system in place that can substitute for the FERC system. Under the best of circumstances, it will take years for MMS or any other agency to promulgate rules adequate to the task. The practical effect of any move to install another federal agency as regulator on state and federal waters would be to put our industry on hold for years—which means that we will close our doors in the United States. Real jobs will be lost here, and an important new energy resource left untapped.

Third, if Congress were to remove FERC from its role as hydropower regulator on the OCS, it would leave the industry and stakeholders with the prospect of having to work through two or more different regulatory systems applicable to otherwise identical projects with identical impacts using the same waves. It would make no sense.

Fourth and finally, please recognize that the status quo, particularly the assertion of project regulatory authority by MMS, is already producing results that are not in the public interest or consistent with Congressional intent.

Section 388 was, at its root, meant to signal that Congress hopes to stimulate renewable energy development on the OCS. The vision behind Section 388 was one of jobs, clean energy, new investments and, in time, fees from the OCS for the federal treasury.

Today, however, no sensible developer will consider placing a wave, tidal or current energy project on the OCS. We will all stay away from the OCS so long as the regulatory authority is unclear, contradictory, or unduly burdensome. This means that valuable sites under federal jurisdiction will not be developed. There will be no clean power and no rents from the OCS. In addition, the potential for user conflicts, particularly conflicts with the commercial fishing industry, is significantly increased if the ocean hydropower industry is forced to develop its projects entirely within the three-mile band of state waters. It is an artificial and unnecessary constraint.

Mr. Chairman, we believe that current law can be interpreted in a way that avoids conflict. However, the unresolved dispute between the federal agencies highlights the regulatory and potential litigation risk we face today. Our view is that current law should be clarified and we urge this Committee to provide that clarification in amendments to the energy and climate related legislation soon to be considered by the full Senate.

In late April, Finavera testified before the House Committee on Natural Resources alongside environmental groups, scientists, coastal state leaders, and commercial fishermen to urge Congress to help promote ocean renewable energy, while assuring protection for environmental and other stakeholder interests. I have attached for your reference a copy of my testimony and answers to written questions.*

There is strong momentum within industry and among the stakeholder groups to bring this new energy resource on line. Please help us move forward by removing unwarranted jurisdictional uncertainty from the law.

We would be pleased to work with you, Committee members and staff to refine potential legislative language so that Congress can send an unequivocal signal in support of responsible development of ocean renewable energy.

Thank you for the opportunity to testify.

ATTACHMENT.—EXAMPLES OF TAX AND OTHER INCENTIVES FROM OREGON AND CANADA

OREGON'S APPROACH

Oregon has adopted a collection of programs designed to create incentives for private investment in renewable energy sources, including ocean wave energy.

Business Energy Tax Credit

The Oregon Business Energy Tax Credit (BETC) is valued at 35% of 'eligible costs' for any particular project. The manufacturing of renewable energy devices qualifies for the BETC. The maximum eligible cost is \$10 million, resulting in a \$3.5 million tax credit. The credit is a dollar for dollar credit against State of Oregon Business taxes owed. In addition, there is a 'pass-through' option that converts the tax credit to a cash payment upon project completion. A pass through partner is identified (with assistance from ODOE) and takes the credit on one's behalf in exchange for a 25.5% cash payment based on eligible costs. Details, contact persons and applications can be found at <http://www.energy.state.or.us/bus/tax/taxcdt.htm>

Energy Loan Program

The Oregon Energy Loan Program (also known as SELP) promotes energy conservation and renewable energy resource development. The program offers low-interest loans for projects that: save energy; produce energy from renewable resources such as water, geothermal, solar, biomass, biofuels, waste materials or waste heat; use recycled materials to create products; or use alternative fuels. The costs of designing and building an Oregon wave energy equipment manufacturing plant is eligible for a loan from Oregon's Energy Loan Program. Likewise, the costs of planning, designing and building a wave energy facility in Oregon is eligible for an energy loan. It appears that both a manufacturing plant and a wave energy facility would qualify for lower-rate loans resulting from tax-exempt bonds. Projects must be in sited Oregon. <http://www.energy.state.or.us/loan/selphme.htm>

Enterprise Zone Exemption (ORS 285C.055)

Through a short-term tax exemption, an Oregon enterprise zone induces eligible businesses of all sizes to make additional investments that will improve employment

* Documents retained in committee files.

opportunities, spur economic growth and diversify business activity. Qualifying new plant & equipment in a zone receives a total exemption for at least three and—in some cases—up to five consecutive years from the local assessment of ad valorem property taxes, which can otherwise have a deterring effect on private investors seeking to start or enlarge operations with a substantial capital outlay. Enterprise zone property (except hotel/resorts and utilities) also is exempt for up to two years while it is being constructed or installed. <http://www.econ.state.or.us/enterthezones/whatare.htm>

Construction-in-Process (C-i-P)

For up to two years, all structures and heavy equipment are exempt from taxation. This exemption is available for each year, in which on January 1 the facility has been neither placed in service nor used or occupied for intended, commercial operations. <http://www.econ.state.or.us/Blexemp.htm>

Strategic Reserve Fund

The Strategic Reserve Fund (SRF) was established by the Oregon Legislative Assembly to support economic and community development in Oregon. SRF projects must be approved for funding by the Governor. With the SRF, Oregon supports cost effective projects that create, expand and preserve the principal traded-sector industries of Oregon. The fund encourages diversification and preservation of regional economies. Administered by the Oregon Economic and Community Development Department (OECDD), the SRF is used to invest in time-sensitive economic opportunities statewide. Awards from the fund must be directly approved by the Governor of Oregon and are most often in the form of a forgivable loan.

Research Tax Credit

The credit applies to research activity or investments during the tax year. It equals 5 percent of the increase in research expenses over a base amount for the taxable year. Alternatively, the credit is 5 percent of qualified research expenses that exceed 10 percent of Oregon sales for the year (capped at \$10,000 for each percentage point in excess). The annual maximum credit allowed per taxpayer is \$2 million. This credit is based on the federal R&D credit and available only to corporate taxpayers. <http://www.oregon.gov/DOR/BUS/docs/102-694-9.pdf>

Strategic Investment Program (SIP)

The Strategic Investment Program (SIP) was authorized by the 1993 Legislature to increase Oregon's ability to attract and retain capital-intensive industry and jobs, particularly in high-technology industry. Under the SIP, traded-sector companies making large investments in new real and personal property are subject to fewer taxes, with the aim of fostering economic growth and improving employment opportunities in the state. Projects approved for the SIP must pay full property taxes on the first \$25 million or \$100 million invested, a threshold that increases 3 percent each year; all value above this threshold is exempt from taxation. An annual Community Service Fee equal to 25 percent of abated taxes, up to \$500,000 or \$2 million, must also be paid. Additional fees can be negotiated, as part of the local approval process with the county and city government. <http://www.econ.state.or.us/Blexemp.htm>

Workforce Training Funds

The Employer Workforce Training Fund (EWTF) provides a resource for training Oregon's private sector workforce. The emphasis of the funds is to upgrade skills of the workforce in order to increase productivity, keep Oregon businesses viable and competitive, and to offer new skills and opportunities to Oregon's workers. Particular emphasis will be placed on investments that assist labor, businesses and industries with cost effective training projects that retain and expand jobs in traded-sector clusters that are economically important to the state's regional economies and the state as a whole.

After the company has been in operation for at least 120 days, it can be eligible for workforce training assistance. Application must be made for such grants and issuance of the grants cannot be guaranteed by the State. However, the State and the local partners shall make best efforts to secure grants for training to meet the company's needs and in accordance with state laws and regulations. <http://www.econ.state.or.us/BIAworkforce.htm>

CANADIAN APPROACH

Canada, and in particular British Columbia (where Finavera's head office is located) is a favorable region in which to set up a technology venture, because of generous research and development tax credits. These incentives include federal gov-

ernment incentives (New “flow through of expenses” regime and SRED), and provincial incentives.

New Federal Government “Flow-Through” and Accelerated CCR Incentives

In its recently-announced 2007 Budget, the federal government made ocean energy eligible for the Canadian Renewable and Conservation Expense (‘Flow Through’) and the Accelerated Capital Cost Allowance regime.

The new tax credits will help ocean energy companies raise money for development work. The ‘flow through’ tax credit—which currently available for mineral and wind resource development—encourages investment in exploration by offering tax incentives to investors.

On April 18, 2007 The Honorable Gary Lunn, P.C., M.P., Canada’s Minister of Natural Resources, wrote Finavera the following letter:

Dear Mr. Bak:

Thank you for your letter of March 26, 2007, regarding tax treatment to ocean energy.

On March 19, 2007, our government displayed its commitment to the environment and renewable energy by announcing the extension of the accelerated capital cost allowance and Canadian Renewable and Conservation Expense (CRCE) to ocean energy and other renewables. As active proponents of this amendment, Finavera Renewables helped to successfully illustrate to government the utility of these market driven tax incentives to support Canada technology and domestic industry.

Through the implementation of these important tax incentives, the Government of Canada is investing in technologies that contribute to reductions in greenhouse gas emissions, improved air quality, that promote the diversification of the energy supply and a competitive economy. We will support the ocean energy sector and its Canadian developers and technology leaders such as Finavera.

Again, thank you for writing on this important matter.

Yours sincerely,

The Honourable Gary Lunn, P.C., MP.

Following are the details of the incentives promulgated in the 2007 Budget.

Accelerated Capital Cost Allowance for Clean Energy Generation

A 50-per-cent accelerated capital cost allowance (CCA) is provided under Class 43.2 of Schedule II to the Income Tax Regulations for specified energy generation equipment. Eligible equipment must generate either (1) heat for use in an industrial process or (2) electricity, by:

- using a renewable energy source (e.g. wind, solar, small hydro),
- using waste fuel (e.g. landfill gas, manure, wood waste), or
- making efficient use of fossil fuels (e.g. high efficiency cogeneration systems).

Class 43.2 was introduced in 2005 and is currently available for assets acquired on or after February 23, 2005 and before 2012. For assets acquired before February 23, 2005, accelerated CCA is provided under Class 43.1 (30 per cent). The eligibility criteria for these classes are generally the same except that cogeneration systems that use fossil fuels must meet a higher efficiency standard for Class 43.2 than that for Class 43.1. Systems that only meet the lower efficiency standard continue to be eligible for Class 43.1.

Where the majority of the tangible property in a project is eligible for Class 43.1 or Class 43.2, certain project start-up expenses (e.g. feasibility studies, engineering and design work) qualify as Canadian Renewable and Conservation Expenses (CRCE). They may be deducted in full in the year incurred, carried forward indefinitely for use in future years, or transferred to investors using flow-through shares.

The Government continues to review Class 43.2 on an ongoing basis to ensure inclusion of appropriate energy generation technologies that have the potential to contribute to energy efficiency and the use of alternative energy sources.

The Federal Budget 2007 proposes to extend eligibility to an emerging source of renewable energy—wave and tidal energy—and to a broader range of applications involving active solar heating, photovoltaics, stationary fuel cells, production of biogas from organic waste, and pulp and paper waste fuels. The Federal Budget 2007 also proposes to extend eligibility for Class 43.2 to assets acquired before 2020.

By encouraging investment in these technologies, these changes will contribute to a reduction in greenhouse gas emissions, improve air quality and promote the diversification of the energy supply.

Wave and Tidal Energy Equipment

The 2007 Federal Budget proposes to extend eligibility for Class 43.1 and Class 43.2 to include equipment that generates electricity using wave or tidal energy, provided they do not do so by means of a barrage or other dam-like structure. Eligible equipment will include support structures, control, conditioning and battery storage equipment, subsea cables and related transmission equipment, but will not include buildings, distribution equipment or auxiliary electrical generating equipment and any other property not used primarily for the purpose of the wave- or tidal-energy system. The change will apply to eligible assets acquired on or after March 19, 2007.

Federal Government SRED Program

The Canadian government provides over \$1.5 billion of incentives each year to companies and other taxpayers who do research and development work. This program is known as the Scientific Research and Experimental Development Program (SRED). Current information on the program is available on the Canada Customs and Revenue Agency (CCRA) web site at <http://www.rc.gc.ca/sred/>. The CCRA is responsible for administering the SRED program, while the Department of Finance, an executive branch of the federal government, is responsible for the legislation that governs it.

What is SRED?

SRED is designed and administered as a federal tax incentive program to encourage Canadian businesses of all sizes and in all sectors to conduct scientific research and experimental development (SR&ED) in Canada. The aim is to encourage and, indirectly, finance new, improved, or technologically advanced products or processes. SRED is the largest single source of federal government support for industrial research and development. SRED claimants can apply for SRED investment tax credits for expenditures such as wages, materials, machinery, equipment, some overhead, and SRED contracts.

Who Qualifies for SRED?

Generally, a Canadian-controlled private corporation (CCPC) can earn an investment tax credit (ITC) of 35% up to the first \$2 million of qualified expenditures for SR&ED carried out in Canada, and 20% on any excess amount. Other Canadian corporations, proprietorships, partnerships, and trusts can earn an ITC of 20% of qualified expenditures for SR&ED carried out in Canada. Generally, a CCPC with a taxable income in the immediately preceding year that does not exceed the business limit may receive a portion of the ITC earned as a refund, after applying these tax credits against taxes payable. The ITC earned by a Canadian corporation that is not a CCPC is non-refundable, but may be used to reduce any taxes payable. The ITC earned by a proprietorship or certain trusts may be partially refunded after applying these tax credits against taxes payable.

What Kind of Projects Qualify for SRED?

To qualify for the SRED program, work must advance the understanding of scientific relations or technologies, address scientific or technological uncertainty, and incorporate a systematic investigation by qualified personnel. Work that qualifies for SRED tax credits includes:

- experimental development to achieve technological advancement to create new materials, devices, products, or processes, or improve existing ones;
- applied research to advance scientific knowledge with a specific practical application in view;
- basic research to advance scientific knowledge without a specific practical application in view; and
- support work in engineering, design, operations research, mathematical analysis, computer programming, data collection, testing, or psychological research, but only if the work is commensurate with, and directly supports, the eligible experimental development, or applied or basic research.

How the SRED Program Financially Assists Companies—Examples

Even if a claimant has no revenue, or has revenue but is not yet profitable, it can receive the SRED credits in cash. The federal government will send such a claimant a check. In British Columbia, that can amount to as much as 68 cents back on every incremental SR&ED dollar spent by the claimant.

Generally, Canadian-controlled private corporations (CCPCs) with less than \$200,000 in taxable income can receive a refundable investment tax credit (ITC) of 35% (68% after the gross up—see below) of qualifying SR&ED expenditures, to a maximum of \$2 million of expenditures. Most other Canadian corporations, propri-

etorships, partnerships, and trusts can receive an investment tax credit of 20% of qualifying SR&ED expenditures.

So, for every \$1.00 the company spends on research and development including an overhead allowance, it may be eligible to receive up to \$.35 back in either cash or a tax credit from the federal government. From a corporate finance point of view, this is similar to having a 35% equity infusion into the business. Public companies and non-CCPCs, such as foreign controlled corporations, are limited to a 20% grant.

The federal government also allows claimants to claim overhead on their SR&ED expenditures. For companies that have a dedicated R&D facility this is easy to do, but if the R&D is part of the company's overall operation the calculation of overhead can be cumbersome. Therefore, the government permits claimants to claim an overhead "proxy" which amounts to 65% of their direct cost. Example: a company hires an R&D employee and pays her \$100K during the fiscal year. The company can actually claim the 35% SRED grant on its total "deemed" cost of \$165K (i.e. $\$100K \times 1.65$).

British Columbia (BC) and other provincial SRED incentives

Certain provinces, such as British Columbia, also provide a provincial SRED credit. In the case of BC, the Province provides an additional 10% SRED credit. So, for every incremental SR&ED dollar spent, a total of \$.68 can be recovered by way of SRED credits—taking into account the provincial and federal SRED credits on the "overhead topped-up" direct R&D cost.

The CHAIRMAN. Thank you very much.

Mr. Steve, go right ahead.

**STATEMENT OF JAIME STEVE, LEGISLATIVE DIRECTOR,
AMERICAN WIND ENERGY ASSOCIATION**

Mr. STEVE. Certainly. Mr. Chairman, I do intend to truncate my already short statement.

The CHAIRMAN. You might want to push that button so everyone can hear your truncated statement.

Mr. STEVE. All right. It will be brief.

Thank you for the opportunity to testify. Appreciate this.

Mr. Chairman, today's typical wind turbine can generate as much as 2 megawatts of power of electricity, or enough electricity to provide for the homes of about 540 households.

A couple of interesting things to note:

Texas today is the No. 1 State for wind energy production, having surpassed California, which held that title for about 20 years.

The Statue of Liberty's torch is powered by a purchase of wind power.

Starbucks, Safeway, and Staples are all purchasing electricity produced by wind power.

Examples of jobs created by the wind industry are: 500 workers building towers for wind turbines in—at Beaird Industries, in Shreveport, Louisiana; 350 workers also producing towers in North Dakota, as well. There are a lot of jobs in this new industry.

Wind developers also pay roughly \$5,000 royalty payments per wind turbine, per year, for a period of 20 years. Let me repeat that one. About \$5,000 to landowners—ranchers, farmers—per wind turbine per year for 20 years. A lot of folks say, "Hey, I can put my kids through college now. I can keep farming, where I couldn't do that before." Significant rural economic development.

We can do even more with offshore development of wind turbines; because the turbines are larger, they can produce more power, as well.

But I do want to stress that there are currently no existing offshore wind turbine projects in the United States. Meanwhile, Eu-

rope has been doing this for well over 10 years. So, the issues are not technological, they're siting issues.

The other point I want to make is that the vast majority of wind development in the United States is going to be on land. I would say probably 90, 99 percent of development will be on land. We have a lot more land here to develop for wind than they do in Europe. Europe moved to offshore because, essentially, they ran out of available land.

The bottom line for our testimony is that we've been working with the Minerals Management Service—we think that's the correct place—for offshore—development of offshore rules for wind development; however, we'd like to see them move faster. The difficulty is that a lot of the folks who are trying to develop projects on the Outer Continental Shelf in the United States are being significantly slowed down by a slow process at MMS. They're good folks. I think they're a little overburdened over there. But we'd like to see 'em move faster.

Thank you.

[The prepared statement of Mr. Steve follows:]

PREPARED STATEMENT OF JAIME STEVE, LEGISLATIVE DIRECTOR, AMERICAN WIND ENERGY ASSOCIATION

Chairman Bingaman and members of the committee, my name is Jaime Steve and I serve as Legislative Director for the American Wind Energy Association (AWEA) based here in Washington, D.C.

Mr. Chairman, today's typical wind turbine can generate as much as two megawatts of electricity, or enough power to meet the needs of about 540 households. It is also interesting to note that:

- Texas is now the No. 1 wind-producing State in the nation, having recently surpassed California which held that claim for over 20 years.
- The Statue of Liberty's torch is powered through a purchase of wind energy.
- Starbucks, Safeway, and Staples are all purchasing wind-generated electricity.
- Examples of wind energy jobs include 500 workers building towers at Beaird Industries in Shreveport, LA and another 350 workers building towers at DMI Industries in West Fargo, ND.
- Wind developers pay about \$5,000 per turbine, per year for 20 years in lease payments to hard-pressed farmers, ranchers and other land owners from Maple Ridge, NY to Abilene, TX. Wind projects also make significant contributions to the local tax base of many rural communities.
- A single wind turbine avoids the same amount of carbon dioxide as is emitted by about 4,800 cars. Larger, offshore wind turbines can produce even more energy and offset even greater amounts of carbon dioxide.

These examples show that supporting wind energy means creating jobs, spurring rural economic development, stemming global warming, and enhancing our national energy security.

Land-based U.S. wind energy production has grown more than 22% annually over the last five years. Currently, there are no existing U.S. offshore wind energy projects, only a small number of proposals. Meanwhile, in Europe hundreds of megawatts of wind turbines have been operating for over ten years in waters near Denmark and the United Kingdom. If the U.S. is to move forward and follow the European example, we must have a coherent, timely, set of rules available so that project proposals are not significantly delayed.

In April of this year the Minerals Management Service (MMS) announced a delay in writing Congressionally-mandated regulations for offshore renewable energy installations on the Outer Continental Shelf. The MMS announced that the target date for the rulemaking—initially set by Congress for fall 2007—then slipped to fall 2008, adding a full year to projects already on hold until the rulemaking is complete. While the original 270-day time frame may have been unworkable for the agency, this delay is equally unworkable for the offshore wind energy industry.

Offshore wind energy projects that were working under an already-long permitting process are now pushed back an additional year. AWEA urges the Minerals

Management Service to move ahead as expeditiously as possible to complete these important regulations so that clean, renewable energy technologies can be deployed on a small part of our nation's ocean resources.

Early indications from MMS documents, including the draft Programmatic Environmental Impact Statement published on March 16, 2007, found most environmental impacts from potential offshore wind energy projects to be negligible to minor. Offshore wind projects in Europe have been intensively studied and have reached similar conclusions, but we can't verify that here in the U.S. until projects actually move forward. That can only happen when the MMS finishes its work. We hope that work can be completed with haste and we stand ready, willing and able to assist those efforts.

Thank you.

The CHAIRMAN. Thank you very much.

Senator Landrieu had a question.

Senator LANDRIEU. Just two questions.

One—and I'm glad you raised it because I was going to—the burdens at MMS, and the backlog and paperwork, what would be your No. 1 or No. 2 recommendations, as a seeker of licenses? Is it a question of personnel—quality, quantity, or both, or training, or—what would you suggest for us, to break through this logjam?

Mr. STEVE. Yeah. I don't want to be presumptuous as to the inner workings of MMS. We've worked very well with Walter Cruikshank over there, who I think is a very dedicated public servant on this issue. I do get the sense that they may be overburdened. They may need a little bit more, in terms of—

Senator LANDRIEU. Staffing issues.

Mr. STEVE [continuing]. Staff analysis, right.

Senator LANDRIEU. Secondly—and I thank the Chair—I'm very interested, of course, in this royalty-sharing issue. We finally got to some fairness in the minerals management offshore, as you know, which was a great breakthrough for the Gulf Coast States, in terms of sharing royalties from traditional sources of energy. But these new sources, you said you have the \$5,000 per wind turbine for landowners on land. What would be your suggestion for offshore placements? Is some sort of sharing routine in Europe, or is there any sort of industry standard that we should be looking at, in terms of between Federal, State, and local?

Mr. STEVE. Yes, good question. I think the best answer there is going to be found in some work that was already done previously by the Bureau of Land Management with regard to the placement of wind turbines on Federal lands. I think that's a good place to start out. And they did do a payment regime there, as well.

Senator LANDRIEU. Do you recall what that is, for the record? I can look.

Mr. STEVE. I'm going into the way-back machine here of the Energy Policy Act, so I'd want to double-check my numbers. As I recall, I believe the payment was somewhere in the range of plus or minus \$2,000—

Senator LANDRIEU. Per turbine.

Mr. STEVE [continuing]. Per megawatt.

Senator LANDRIEU. Per megawatt.

Mr. STEVE. Per megawatt, yes. But I'd just double-check that.

Senator LANDRIEU. Thank you.

The CHAIRMAN. Senator Murkowski, did you have a question?

Senator MURKOWSKI. I do, thank you.

The CHAIRMAN. They have started a vote. I'd just point that out.

Senator MURKOWSKI. I'll be very brief, Mr. Chairman, thank you.

Mr. Bak, I mentioned, when I was speaking to Secretary Allred and Mr. Robinson, that Alaska has a great deal of interest in wave energy, ocean energy projects. In dozens of small coastal communities that are looking at this, they view this as an opportunity to get themselves off diesel-powered generation, which is what they're all on right now. If we are able to take care of the jurisdictional issues that you mentioned here—and they're included in your written testimony—and we pass the other pieces of legislation that I and some of my other colleagues have been working on, when do you figure a company like Finavera could be in a State like Alaska, working on some of our projects?

Mr. BAK. We have looked at Alaska already, and you'll be happy to know, and I'm sure you're aware, that Alaska actually has the best wave energy resource in the country, even exceeding Oregon's, but not to pit one State against the other.

Senator MURKOWSKI. But they're starting ahead of us.

Mr. BAK. Exactly. There is fantastic opportunity with the off-grid communities in Alaska, because they pay such high prices for the diesel that they're importing. So, I see wave energy at first being a significant supplement to these communities, and then being expanded with economies of scale thereafter, so that you could actually have 20- to 100-megawatt power plants at some point in the near future. For single devices, we'd have to look at our economic modeling, but I believe that that is achievable between 2010 and 2013, and we're planning to ramp up the installation of our technology following the Makah Bay installation, which is targeted for 2010.

Senator MURKOWSKI. Good.

Then, one last question, and that's on fisheries. Of course, we want to make sure that if we do move to something like an ocean energy, wave energy, that it's not a disturbance to the fisheries in the area. Can you speak a little bit to that aspect of the compatibility?

Mr. BAK. Certainly. I live in a small fishing community. My brother-in-law is a fisherman. I'm very aware, personally and also through the stakeholder processes that we've run as a company, of a number of those issues.

Our goal and our optimum zone in time is to move farther offshore. So, initially we're going to occupy some areas that are closer to shore, and, with involvement of the stakeholders in the licensing process, we will work with all of them to ensure that their concerns are addressed. We anticipate that, in time, as our technology becomes cheaper, as the scale of deployment becomes larger, the project financing, the structure of finance, the economics of the project, will allow us to move farther offshore into the OCS, and eventually beyond, so that we can have large-scale power plants that aren't interfering with near-shore fishing. So, that's our end goal.

Senator MURKOWSKI. How much of a deterrent is that, currently, in putting any of your projects in place, whether they be in Oregon, Washington, or in Alaska?

Mr. BAK. All of the projects that we are working on right now are within the 3-mile limit. We would like to go beyond that. But,

because of these existing issues, we can't. There's a fantastic resource that needs to be captured, and we can generate revenue from that resource, but, until this licensing issue—or the agency issue—is sorted out, we have too much risk; a bank won't come near these projects. So, it is an impediment.

Senator MURKOWSKI. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Smith.

Senator SMITH. Thank you, Mr. Chairman. I'll be brief.

My questions are not unlike Senator Murkowski's. Is it fair to say, Mr. Bak, that, but for the regulatory uncertainty, the risks that you see, you would already be investing in Federal OCS in Oregon, but, because of that, you're not?

Mr. BAK. Correct. Our initial site straddled the boundary. The optimal site that we picked did straddle the 3-mile-and-beyond limit, and we reined ourselves in. So, because of this licensing dispute, because of the lack of clarity, we had to do that, simply because we want to have a bankable project in the near term, rather than later. Our key focus is bringing the bank finance to that project.

Senator SMITH. I wasn't here for Mike Grainey's testimony, but I'm familiar with it and, obviously, the concern the States have in this issue. Obviously, you don't believe that FERC should yield to the States. Is that a fair statement?

Mr. BAK. I think, as an entrepreneur and a CEO, we just want to see the most simple and straightforward process when it comes to de-risking the development of wave energy projects. So, I wouldn't put myself in the middle of it, other than saying that we have a fantastic relationship with FERC. They have helped us a lot in Makah Bay, and we'd like to work with them in the future.

Senator SMITH. Is there any State which you are working with where there's a model that seems to be better than others?

Mr. BAK. Again, the relationship we have with FERC through the Makah Bay project in Washington is excellent, with the incentives that Oregon has bent over backward to provide the industry and really stimulate what can be a huge revenue generator. We see a lot of focus being spent on Oregon in the future.

Senator SMITH. So, we need to clarify the regulatory scheme, or else this just isn't going to happen.

Mr. BAK. Exactly. Our goal, as a commercial company, is to provide the returns for our investors, and we simply want to do it as quick as we can.

Senator SMITH. Thank you.

The CHAIRMAN. Well, thank you both very much for your testimony. I think it's been very useful.

That will conclude our hearing.

[Whereupon, at 11:12 a.m., the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses to Additional Questions

RESPONSES OF J. MARK ROBINSON TO QUESTIONS FROM SENATOR BINGAMAN

Question 1a. If the Commission applies its hydroelectric licensing process to ocean energy projects on the OCS, how would this process be coordinated with MMS's authorization process for renewable energy projects under section 388 of the Energy Policy Act of 2005?

Answer. Through our ongoing MOU negotiations, the Commission and MMS intend to achieve a coordinated program for the orderly development of wave and current energy on the OCS that avoids redundancy and makes use of the complementary resources of both agencies. Those complementary resources include the MMS's planning experience and knowledge on the OCS and the Commission's established hydropower licensing experience. Although the details are still under discussion, our objective is to craft an efficient program for the benefit of all stakeholders.

Question 1b. Do you think that the Federal Power Act provides authority for MMS to provide mandatory conditions under section 4(e) of the Federal Power Act? Please provide any legal analysis that supports your conclusion.

Answer. Yes. Section 4(e) provides that, where the Commission issues licenses "within any reservation" of the United States, the license must include "such conditions as the Secretary of the department under whose supervision such reservation falls shall deem necessary for the adequate protection and utilization of such reservation." Section 3(2) of the Federal Power Act defines "reservation" as "national forest, tribal lands embraced within Indian reservations, military reservations, and other lands and interests in lands owned by the United States, and withdrawn, reserved, or withheld from private appropriation and disposal under the public land laws; also lands and interests in lands acquired and held for any public purpose; but shall not include national monuments or national parks[.]" In consequence, the United States' interest in the Outer Continental Shelf appears to give the Secretary of the Interior the authority to impose section 4(e) conditions on licenses issued for projects in that area.

Question 2a. What responsibilities does the FERC have with respect to transmission of electricity generated on the OCS?

Answer. Section 23(b) of the Federal Power Act makes it unlawful for "any person, State, municipality, for the purpose of developing electric power, to construct, operate, or maintain any dam, water, conduit, reservoir, power house, or other works incidental thereto across, along, or in any of the navigable waters of the United States, or upon any part of the public lands or reservations of the United States . . . except under and in accordance with the terms of . . . a license granted pursuant to this Act." Section 2(11) of the Federal Power Act defines "project" as including "the primary line or lines transmitting power [from a project] to the point of junction with the distribution system or with the interconnected primary transmission system . . .". If a hydropower project located on the outer continental shelf included a primary transmission line, that line would have to be licensed by the Commission. The Commission would not have responsibilities with respect to transmission lines from other sources of generation, such as wind or thermal energy, absent an appropriate invocation of the Commission's supplemental authority to site electric transmission facilities under section 1221(b) of the Energy Policy Act of 2005.

Question 2b. Please describe how any regulatory activities with respect to transmission would be coordinated with the project approval or licensing process.

Answer. The Commission authorizes primary transmission lines, along with other project works, as part of the project licensing process.

Question 3. What do you think should be the respective jurisdictions of (1) the MMS; (2) the FERC; and (3) the coastal states, in authorizing ocean renewable energy projects?

Answer. Under the Outer Continental Shelf Lands Act, as amended by the Energy Policy Act of 2005, MMS generally has jurisdiction to issue leases, easements or rights-of-way on the Outer Continental Shelf related to production, transportation, or transmission of energy from sources other than oil and gas (although not within any National Park, National Wildlife Refuge, National Marine Sanctuary, or National Monument). The Outer Continental Shelf includes all submerged lands lying seaward and outside of State offshore waters, which are located within three nautical miles of state coastlines (three marine leagues for Texas and the Gulf Coast of Florida). As noted above, the Commission has jurisdiction over hydropower projects located in the navigable waters of the United States or on federal lands. This allocation of federal jurisdiction between the Commission and MMS seems appropriate. Coastal states have authority over ocean renewable energy projects to the extent authorized by federal law, such as the Coastal Zone Management Act. This authority, which applies within state waters (and thus not to the Outer Continental Shelf or to waters beyond the three-mile state limit) also seems appropriate. I note, in addition, that regardless of whether states have specific regulatory authority over particular projects, the Commission remains committed to working collaboratively with states in our licensing proceedings.

Question 4. Under the FERC process, license applicants can obtain preliminary permits for up to three years. What gives the FERC jurisdiction to issue permits for the use of the submerged lands on the OCS? What is the effect of these preliminary permits?

Answer. Section 4(f) of the Federal Power Act authorizes the Commission to issue preliminary permits for the purposes of securing data and performing studies necessary to support a license application. As set forth in section 5 of the Federal Power Act, preliminary permits are issued “for the sole purpose of maintaining priority of application for a license . . . for [a] period . . . not exceeding a total of three years . . .”. Thus, a preliminary permit does not give the permit holder the authority to engage in construction or other ground-disturbing activity, or to acquire lands.

Section 4(e) of the Federal Power Act gives the Commission authority to issue licenses for project works “for the development, transmission, and utilization of power across, along, from or in any of the streams or other bodies of water over which Congress has jurisdiction under its authority to regulate commerce with foreign nations and among the several States, or upon any part of the public lands or reservations of the United States . . .”. Thus, the Commission has authority to issue licenses (or preliminary permits) for project works located in offshore waters subject to Congress’ Commerce Clause jurisdiction, and on the submerged lands of the Outer Continental Shelf, which are lands of the United States.

RESPONSE OF J. MARK ROBINSON TO QUESTION FROM SENATOR DOMENICI

Question 1. Isn’t it true that a state can stop any project in state waters—be it a wind, solar, or LNG project—by denying any state permits or authorization?

Answer. I note that the Commission has no jurisdiction over wind or solar projects. However, it is the case with respect to any project that requires a federal permit (including LNG projects, natural gas pipeline projects, and hydropower projects), that a state may be able to stop the project, if it traverses state waters, by denying authorization required by federal law, such as the Coastal Zone Management Act.

RESPONSES OF J. MARK ROBINSON TO QUESTIONS FROM SENATOR SMITH

Question 1. Is FERC going to be able license these new wave and ocean energy facilities in a way that is not cost prohibitive for the developers, since these facilities, at least initially, will produce a relatively small amount of power compared to large hydroelectric dams?

Answer. Yes. The Commission’s conventional hydropower review process has been refined over almost a century to be flexible and efficient while maintaining safety, public health, and environmental protection and ensuring the comprehensive development of hydropower resources consistent with the Federal Power Act and related statutes. Efficiencies existing in the Commission’s process include coordination of most of the statutory requirements faced by developers into one review and one en-

vironmental document, early involvement of Commission staff, and firm timelines for both stakeholders and staff.

In order to accommodate the unique characteristics of new hydropower technologies, we are adapting our existing licensing process to accommodate experimental deployments and reforming our policies on issuing and overseeing preliminary permits. These steps are intended to minimize the cost and time to develop these important, renewable resources while ensuring appropriate oversight.

Question 2. Last year, there were press reports that plans for a wave-energy facility off of Narragansett had been put on hold. One reason was the high cost of the FERC licensing process. Another reason cited was FERC's "utility displacement condition," meaning that the developer was going to have to pay the incumbent utility for the \$200,000 worth of electricity the test generator was going to displace. Can you explain this in more detail?

Answer. I am not familiar with the specific press reports you mention. However, I believe you are referring to interest by Energetech America, LLC (Energetech) in developing a demonstration project (the Green Wave Tidal Energy Project) to be located in tidal waters about 1.2 miles from Point Judith, Rhode Island. I assume that the "utility displacement condition" that you reference relates to the Commission's holdings in the Verdant case. Energetech would be subject to these holdings. As noted above, section 23(b) of the Federal Power Act makes it unlawful for any person to construct hydropower project work on navigable waters or federal lands "for the purpose of developing electric power" without a Commission license. The Act contains no exception for electric generation for test projects or for limited periods of time.

In the Verdant case, the Commission was presented with an instance where the project developer wanted to test new technology for a project in New York's East River without first obtaining a Commission license. The test included generating electricity and supplying that electricity to the interstate electric power grid. The Commission, in an effort to support the development of new energy sources, interpreted section 23(b) in a creative manner, by holding that the short-term testing of new technology in order to perform studies necessary to development of a license application would not constitute "developing electric power," even where the test project technically did produce power, provided that the power did not displace power from the interstate electric power grid or otherwise affect interstate commerce. The project proponents in Verdant wanted to connect to the grid in order to test their project, but agreed to make the test "grid-neutral" by paying the utility whose power was displaced by the test power for the amount of revenues that the utility lost as a result of displacement by project power. The Commission concluded that, under these terms, the test project would not require a Commission license (although it would require all federal, state, and local environmental and other applicable approvals).

Based on past meetings with Energetech, Commission staff understands that Energetech wishes to test the Green Wave Tidal Project by displacing power from the grid, but does not want to repay the affected utility for the costs of displaced power sales. Such a case—where the project proponent would put power into the grid, receive revenue for the power, and displace power from another generator, thereby affecting interstate commerce—would go beyond the limited circumstances in Verdant in which the Commission found itself able to conclude that a test project would not be "developing electric power." Energetech, or any similar project proponent, might be able to avoid the necessity of a license by testing its project through connection to an electrical system that is not connected to the grid or by compensating any generator that loses sales as a result of interconnection to the grid as Verdant did. Commission staff is always available to work with project proponents to determine if there is a solution to their concerns.

Question 3. Is this utility displacement condition an administrative policy of FERC, or would Congress have to address this in legislation?

Answer. The Commission's holding in Verdant represents its interpretation of the Federal Power Act.

Question 4. What is the status of the MOA between FERC and MMS?

Answer. The MMS and the Commission have exchanged several drafts of an MOU. It is my hope that we will have a document to sign by early summer. I am confident that together we will develop an efficient program that makes use of the complementary resources of the two agencies without redundancy.

RESPONSES OF MICHAEL W. GRAINEY TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. Are any of the proposed projects off the Oregon coast located on the OCS?

Answer. Yes, only one of the seven projects proposed off the Oregon coast is located on the Outer Continental Shelf (OCS). This project is

- FERC Filing P-12750
- Newport OPT Wave Park
- Lincoln County, Oregon

The project site is situated both within and outside of the state boundary and straddles the OCS. The site is in the open ocean extending from about 3 to 6 miles offshore.

The other six projects are all within the state three mile limit. In part this is because of the cost of underwater cables you raise in question 2 and because the intensity of the waves seems most promising less than three miles from shore. Most wave energy projects in the foreseeable future will also likely be less than three miles from shore for the same reasons. This underscores the need for states to have the same power plant siting authority with respect to FERC for less than three miles off shore that Section 388(e) of the Energy Policy Act of 2005 provides to states in regard to MMS on the OCS.

Question 2. I understand that underwater power cables can be quite expensive—approximately \$1 million a mile. How is the State addressing this cost issue?

Answer. Oregon provides incentives to assist developers of renewable energy, including not only the turbine, but also related infrastructure such as transmission lines and underwater cables. Oregon provides a 35% tax credit and a low interest loan for financing the capital cost of renewable energy facilities. A project, including underwater cables, can qualify for both the tax credit and loan for the same project.

The current session of the Oregon Legislature has increased the limit of the Energy Loan Program by \$25 million to help finance these type of projects. Current state legislation will also increase the state energy tax credit from 35% to 50% of renewable energy project costs.

Wave developers are also considering creating a public wave hub or universal interconnection platform where various wave energy projects could “plug in.” This could be part of Oregon State University’s National Wave Energy Research and Demonstration Center.

I hope this information is responsive to your questions. Please contact me if I can provide additional information. Again, thank you for the opportunity to present information to the Committee.

APPENDIX II

Additional Material Submitted for the Record

STATEMENT OF DIANE REGAS, J.D., MANAGING DIRECTOR, OCEANS PROGRAM,
ENVIRONMENTAL DEFENSE

Thank you Chairman Bingaman, Ranking Member Domenici, and Members of the Committee for the opportunity to provide written comments on behalf of Environmental Defense on renewable ocean energy development in the United States.

Environmental Defense is a worldwide, not-for-profit organization, whose hallmark is “finding the ways that work,” environmentally, economically and legally. Our organization is deeply committed to durable strategies that meet people’s needs for energy while taking dramatic action to reduce global warming pollution. Achieving this goal will entail the use of a variety of tools including energy conservation and renewable energy production.

“BLUE” OCEAN ENERGY

Meeting America’s on-going energy needs while at the same time addressing the global warming challenge will require a new age of energy conservation, and the tapping of sustainable options for ecofriendly energy production. There is no doubt that firm limits on emissions of greenhouse gases, and increased energy conservation, are critical to slowing global warming. But it seems increasingly unlikely that conservation alone can meet the nation’s energy demands. As the world turns to “low carbon” or “clean” energy sources that minimize contributions to global warming, it is increasingly likely that the sea will be a part of the “greening” (or, maybe more appropriately in this case, “bluing”) of our energy-production portfolio.

There are key ocean energy sources (like wind, tide, wave, and current) that are potentially sustainable, and that will help us address global warming, while others will not help us move closer to a sustainable future (for example, methane clathrates from the deepsea).

Ocean energy development should occur under the following guiding principles:

1. *National Oceans Policy.*—Ocean energy development should be based on clearly defined standards and criteria, and consistent with a national policy of protecting and restoring healthy ocean ecosystems, including minimizing cumulative impacts.
2. *Public Interest.*—The public should benefit from the use of public resources, and appropriate incentives should be in place to encourage green energy development.
3. *Public Participation.*—Decision processes should encourage public engagement, and meet the highest standards of transparency.
4. *Science and Technology Advancements.*—The federal government should support the research needed to develop cutting-edge green technologies, to understand and mitigate their potential impacts, and to accelerate technologies that are less polluting, and consistent with sustainable oceans.
5. *Investment.*—The federal government should invest in the science needed to manage marine ecosystems effectively; government decisions should be based on peer-reviewed science.

PROTECTING OCEAN ECOSYSTEMS

Today, it appears that while some ocean energy technologies have unacceptable impacts on coastal ecosystems, many others may have manageable environmental impacts. Even so, our decision-making processes are not currently adequate to distinguish among projects that are consistent with sustainable oceans and those that are not.

To make the challenge even greater, many of the technologies available today have the very real potential for much greater cumulative impacts at larger scales. Little has been done to assess the ecosystem consequences of commercial scale operations in the ocean, or to identify ways to minimize and mitigate those effects. For example, a small wave energy facility may have a negligible impact, but many such facilities or a very large scale facility could have adverse impacts on local circulation patterns that could be critical for maintaining transport of fish larvae, sediment and nutrient delivery, and other important ecological processes and services. Similarly, the way ocean energy projects are implemented, and the specific kind of technology employed, could have a large bearing on the size of their cumulative environmental impact. For example, slow-speed turbines that are phased in over time would likely have lower environmental impacts than the damming of an estuary to construct a tidal energy installation.

INCENTIVES AND PUBLIC BENEFITS

The ocean is a vast common resource, presenting significant challenges for policy makers on how to avoid unsustainable use while encouraging appropriate development. Few “use privileges” or other conservation incentives exist in the sea that could institutionalize orderly and controlled development of marine resources. Environmental Defense has recently completed a study of approaches that have been used in this country to manage public trust resources, called “Sustaining America’s Fisheries and Fishing Communities.” We found that while granting use privileges is a common tool in resource management, the way those privileges are administered can achieve other social benefits.

There is also a strong need for a new “social contract” with regard to ocean resource use similar to the evolution of natural resource policies, where emphasis has shifted through time from rapid extraction at all costs (“use-it-or-lose-it,” with no economic rents) to sustainable use (appropriate regulation coupled to positive incentives, and including economic rents, e.g. auctions of electromagnetic spectrum).

CURRENT CHALLENGES

The United States lags behind others in assessing, experimenting and investing in truly sustainable ocean energy technologies, and has fallen far short on investing in the science necessary to manage ocean ecosystems effectively. Basic information on the distribution, abundance and function of marine habitats is woefully inadequate. Much of the information available on deepwater ecosystems has been developed directly by private project proponents. Improving our understanding of habitat function and oceanographic processes that support habitats and biodiversity is critical to effectively avoiding impacts on important habitats, and mitigating for unavoidable impacts. Similarly understanding the array of prospective technologies, and their likely implications for marine ecosystems, will provide an important foundation for sustainable ocean energy.

Recent debates have centered on the risks and environmental dangers of specific installations, and on perceived impacts on coastal ways of life, rather than on defining broad science-driven criteria and standards for ocean energy development that transcend individual projects while conserving coastal landscapes and seascapes. Certainly, states, coastal communities and other ocean resource users (e.g., fishermen) should have a voice in where development occurs. However, fully understanding the potential costs (such as habitat degradation) and benefits (including reducing the impacts of global warming) is critical to ensuring rational decision-making that is in the best interest of all.

Management authority for ocean uses is split among many agencies with unaligned legal requirements. There is neither a clearly defined approval process for “blue” energy development nor are there set conditions for decision-making. Getting past this fractured system of ocean governance will require the development and implementation of programs that people can trust to ensure that the coastal environments they hold dear will not be destroyed by industrial development for renewable energy production.

DEFINING A REGULATORY FRAMEWORK

Establishing a transparent and robust regulatory framework for alternative ocean energy can help development of clean energy technologies as well as strengthen public confidence and buy-in regarding decisions. Industry can benefit from regulatory certainty. The public interest can be promoted with rational decision-making.

This requires establishing both a national policy for protecting ocean and coastal ecosystems (including consideration of cumulative impacts) and a lead federal agency. Currently both Minerals Management Service (MMS) and Federal Energy Regu-

latory Commission (FERC) have authority regarding licensing and permitting of ocean energy technologies. Pursuant to the Federal Power Act (FPA), FERC holds licensing authority for hydroelectric plants on navigable waters. Pursuant to the Outer Continental Shelf Lands Act (OSCLA) MMS authorizes the leasing of the seabed of the Outer Continental Shelf (OCS) and as amended by the Energy Policy Act of 2005 may lease for alternative energy technologies. The dissonance of federal governance necessitates a clarification of jurisdictional authority.

The FERC licensing process is designed to accomplish these goals through a comprehensive review that provides for public comment and has an adjudicative process, including a trial-type hearing for issues of material fact, ensuring transparency. However, FERC should not be the sole agency in the licensing process, especially as it lacks expertise in the science and management of ocean ecosystems and resources necessary for ocean conservation. In addition, all ocean projects should be held to a strong national ocean policy.

Ensuring that appropriate wildlife agencies, including NOAA, put necessary conditions for avoiding or mitigating ocean and coastal impacts on licenses is critical. The FPA has provisions allowing for mandatory conditions imposed on a FERC license where the hydroelectric plants are sited on land reservations under the jurisdiction of another agency. This ensures that lands under the control of Department of Interior or Department of Commerce (including NOAA) play “the major role in determining what conditions would be included in the license in order to protect the resources under their respective jurisdictions.” In addition, Section 10(j) of the FPA provides for consideration of fish and wildlife impacts when considering license conditions. Section 18 of the FPA requires the construction of fishways as prescribed by the Secretaries of Commerce or Interior. It is essential that agencies with marine ecology expertise have power to establish appropriate conservation conditions.

We urge the Committee to examine whether classifying the OCS as a reservation under the FPA would allow for mandatory fish and wildlife safeguards to be imposed within the licensing process led by FERC. Allowing FERC to lead the licensing process, with inclusion of mandatory conditions on the license from relevant wildlife agencies (including NOAA), would strengthen the decision-making process.

Thank you for the opportunity to provide written testimony. I am happy to answer any questions in writing.

STATEMENT OF NATHANAEL GREENE, SENIOR POLICY ANALYST, NATURAL RESOURCES
DEFENSE COUNCIL

SUMMARY

General

- Carve-out federal research and development (R&D) dollars for independent studies of environmental impacts to 1) understand the cumulative impacts of large scale deployment of ocean and marine energy technologies, 2) avoid early black-eyes that will set the industry back years, and 3) support an open and transparent permitting and regulatory process by building consensus among regulators, the public, and industry around the environmental benefits and impacts of real concern.
- Look at regions with resources that have high energy production potential and build baseline data on nature of the resource and the ecosystems in place that surround the resources.
- Use the baseline data and analogous technologies to narrow and bound unknowable potential environmental impacts.
- Focus “lessons learned” studies on the areas of greatest environmental uncertainty.
- Use these studies to inform adaptive management strategies so that projects can proceed in the face of the real uncertainty surrounding some impacts and also still be eligible for private sector financing.
- Consider a federal fund to support the more extensive potential adaptive management options including removal for the first few projects.
- Utilize early successes in this approach as test cases for future, more large-scale deployment initiatives.
- Focus federal R&D dollars on studies of a few regions with high resource potential, study other manmade installations in oceans and marine areas in order to anticipate impacts of alternative energy technologies, and prioritize post-installation lessons’ learned studies.
- Require access for independent pre- and post-installation environmental studies as part of eligibility for any federal subsidies.

- Ensure that studies address the cumulative impact of multiple projects and of multiple installations within one project.
- Exclude offshore wind from the Marine Renewable Energy Research and Development Act of 2007 except to study offshore wind projects to learn lessons that may inform other projects and as part of regional cumulative impact analyses.
- FERC should work with state and federal natural resource management agencies to do a programmatic environmental impact statement for the licensing of new hydrokinetic technologies.
- Regional studies should help build consensus around areas that are best suited for early development and those that should be avoided at least until the potential impacts of the technologies are much better understood.

INTRODUCTION

Thank you for the opportunity to share my views on Outer Continental Shelf alternative energy technologies. My name is Nathanael Greene. I'm a senior policy analyst for the Natural Resources Defense Council (NRDC) and one of our main experts on renewable energy technologies. NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles and San Francisco.

Mr. Chairman and esteemed members of this committee, as you know, U.S. energy policy needs to address three major challenges: reducing global warming pollution, providing affordable energy services that sustain a robust economy, and increasing our energy security. Renewable energy technologies in Outer Continental Shelf areas such as wind, wave and hydrokinetic energy can play a critical role in meeting these goals, and these technologies have the potential for dramatically increased deployment over the coming decades. These sources of energy can be used to produce electricity with little or no global warming pollution or local or regional air pollution, and they draw on domestic energy sources that are naturally replenished and do not vary in cost. By using these technologies we avoid burning fossil fuels, particularly coal and natural gas and to a lesser degree oil. The heat-trapping gases released when we burn these fuels make the power sector the largest single source of global warming pollution. These funds are also responsible for other significant environmental and public health impacts during mining, drilling, processing, and combustion, and they expose our economy to price volatility and energy insecurity.

All energy technologies cause some environmental damage. Being better than fossil fuels is a necessary condition, but hardly sufficient. Independent research and development focused on the environmental characteristics of these technologies is critical to maintaining their positive impacts and avoiding, managing, and mitigating the negative ones. Good R&D on the environmental impacts is also critical to an open and transparent permitting process and in building a constructive relationship between regulators, the public, and the industry so that these technologies can be deployed in a manner that is quick, efficient and responsible.

GENERAL COMMENTS

The environmental impacts of renewable technologies such as wind, wave and hydrokinetic energy must be considered in the context of the detrimental alternative outcomes if we choose to not actively deploy these technologies. Most of the traditional energy sources (e.g. coal, natural gas, oil) ensure a far different and potentially much more devastating environmental future. Meeting our energy service needs through improved energy efficiency is the fastest, cleanest, cheapest option, but even the most efficient technologies require some energy to operate. Outside of the transportation sector, if we're not using renewable energy then chances are we're using coal, natural gas, or nuclear power with some oil primarily for heating.

The consequences of not moving away from these traditional fuels to energy efficiency and renewable energy are severe, and impact almost every aspect of the environment and public health. However, none of these consequences are ultimately more urgent than reducing global warming. The recent Intergovernmental Panel on Climate Change report concluded that there was at least a 90 percent chance that heat-trapping pollution was the main cause of warming since 1950. The science is clear: global warming is real, it's already occurring, and we're responsible for it. We can avoid catastrophic damage, but only if we start reducing our rate of pollution seriously within the next 10 years and achieve 60 to 80 percent reductions by 2050.

This is where renewable energy technologies such as wind, wave, and hydrokinetic energy can be so beneficial. The heat-trapping gases emitted during

combustion of fossil fuels makes the power sector the largest single source of global warming pollution. Developing wind, wave, and hydrokinetic energy, as part of a renewable energy portfolio, is a vital step towards replacing a significant amount of the fossil fuel-generated power. Moreover there is a domestic argument as well. The United States is the largest emitter of heat-trapping gases causing 25 percent of global warming despite having just 4 percent of the world population. Wind, wave, and hydrokinetic energy are domestic renewable energy sources that can reduce our carbon footprint globally, and encourage other countries to do the same.

Of course, no energy technology is without environmental impacts, and simply being better than fossil fuels is a little like being better than a poke in the eye, it's a necessary but not sufficient aspect of a truly sustainable energy mix. Studying the environmental characteristics of renewables serves two critical purposes: 1) it allows us to identify, avoid, manage, and mitigate the real environmental impacts of renewable energy technologies; and 2) it builds a constructive relationship between regulators, the public, and industry that focuses on the real impacts and not "red herring" issues that have limited impact and can obstruct the deployment of strong projects. Taken together these outcomes are needed to allow for the best public review and permitting process.

Ocean energy is currently used to produce just a few megawatts of energy in spite of the fact that it could easily be producing tens of gigawatts within the next few decades. However, the relative infancy of this technology presents two important challenges. First to understand the real sustainability of this technology, it is insufficient to look at the impacts from a single project. We must also study the cumulative impact of this technology brought fully to scale, and lay out our vision of what we want the industry to ultimately become. Second, ocean technologies are particularly vulnerable to major setbacks that could stifle growth if early projects become notorious environmental failures.

In the context of federal energy legislation, we should focus on two types of environmental risks to understand the cumulative impacts and avoid early public black-eyes. The first type of risk involves impacts that we can predict with increasing accuracy with greater experience and data collection. An example of this type of risk would be determining the chance of whales being hurt by the sounds of construction. The more we learn about whales' habits in the region of the project, the more we can quantify the probability of whales being present during construction. The more we learn about whales' habits in the region of the project, and what effective mitigation measures we can take to avoid and minimize impacts on whales, the more we can quantify the probability of whales being affected by project construction.

The second type of risk is of impacts that we cannot predict because they result from new types of interaction that simply have never occurred before. An example would be how fish might adapt to underwater turbines in the ocean. These would be first-of-a-kind interactions and the probability of the possible impacts is fundamentally unknowable.

We can address the first kind of risk by building a detailed understanding of the baseline conditions in the area of a potential project. Unfortunately, given that many species may pass through a given part of the ocean during certain seasons, developing this database may significantly slow a proposed project. If, instead of studying the baselines on a project-by-project basis, we identified a few regions with high resource potential, and focused federal R&D dollars on building the necessary baseline data in those areas, we could facilitate the permitting of individual projects. This would help us develop a better understanding of what the cumulative impacts might be in a region where multiple projects are likely.

Research and development dollars can also help narrow and bound the uncertainty associated with unknowable risks. For instance, if we were considering a certain type of ocean technology, previously collected baseline data would allow us to conclude that a project in that region of the ocean would have a very low chance of interacting with endangered or at-risk fish populations. Further study of similar equipment coupled with modeling the worst-case scenarios might allow us to conclude that even development of multiple projects would be very unlikely to have any significant impacts of the fish populations. In other words, even for unknowable risks associated with putting new technologies into new conditions, federal R&D can help build consensus around the issues of greatest potential concern and those that are very unlikely to impose significant restraints.

Of course this type of work should be followed up with "lessons learned" studies to help avoid, manage, and mitigate future impacts and provide more information to help narrow and bound other unknowable risks. Indeed, given the much higher level of uncertainty surrounding these technologies, the lessons learned from each project during operation should be used to update the management of future projects, and the conditions of future permits, especially during the early develop-

ment stage of the each industry. In particular these studies should be used to inform adaptive management requirements in permits. Adaptive management requirements establish a process for changing a project's operations and equipment configuration to avoid or reduce environmental impacts that are larger than anticipated. This is a critical tool for allowing projects to proceed when there is a level of uncertainty around impacts that would be unacceptable if the projects' management strategies are fixed over time.

Further research on the potential environmental impacts associated with these nascent renewable technologies is needed to support adaptive management permitting requirements. Given the limits on our ability to establish baseline data and the unknowable risks associated with new technologies in new conditions, regulators must be able to require projects to adapt their management to address unacceptable levels of impacts (that may not appear at present). The baseline data and studies to narrow and bound unknowable risks will be critical to identifying unacceptable levels of impacts (e.g. is the line crossed at one bird or fish or one hundred?) and what alternative management options are possible.

Making adaptive management work is not only important from the environmental perspective; it is also critical to making projects acceptable for private sector financing. Lenders and investors will not support projects that face potentially significant costs or lost capacity as a result of management being forced to avoid or manage an unforeseen impact. Developing a clear, transparent permitting process, that includes state and federal agency input in developing adaptive management requirements, will also help attract private funding.

Indeed, given the importance of adaptive management to making some first-of-a-kind projects acceptable from ecological and public health risk perspective, and the challenge that some adaptive management options might pose to a project's financing, the federal government could play an important facilitating role in alternative energy development in Outer Continental Shelf areas. The government could create a fund that covers a portion of the costs associated with the most extreme and expensive changes in management that might be necessary for early projects.

RECOMMENDATIONS

- Carve-out federal R&D dollars for independent studies of environmental impacts to 1) understand the cumulative impacts of large scale deployment of these ocean and marine energy technologies, 2) avoid early black-eyes that will set the industry back years, and 3) build consensus among regulators, the public, and industry around the environmental benefits and impacts of real concern.
- Look at regions with resources that have high energy production potential and build baseline data on the nature of the resource and the ecosystems in place that surround the resources.
- Use the baseline data and analogous technologies to narrow and bound unknowable potential environmental impacts.
- Focus "lessons learned" studies on the areas of greatest environmental uncertainty.
- Use these studies to inform adaptive management strategies so that projects can proceed in the face of the real uncertainty surrounding some impacts and also still be eligible for private sector financing.
- Consider a federal fund to support the more extensive potential adaptive management options including removal for the first few projects.
- Utilize early successes in this approach as test cases for future, more large-scale deployment initiatives.

OCEAN AND HYDROKINETIC ENERGY

There are three reasons that study of the environmental impacts of ocean and hydrokinetic energy is particularly important: 1) the technologies are in a nascent stage of development with only a few pilot scale projects in operation around the world; 2) due to the diffuse nature of the energy resource in the ocean and moving water, this family of technologies necessarily requires many pieces of equipment spread out over great distances to capture traditional electric utility-scale amounts of electricity; 3) the oceans are prized for their open vistas, importance in the global ecosystem, and also particularly vulnerable to global warming.

As recommended above, R&D looking at the environmental impacts of this family of technologies should focus on a few regions with especially high resource potential, ideally for multiple technologies. Studying the ecosystems of oceans and marine areas is obviously a complicated and time-consuming process. Furthermore because so much is unknown about the interaction of wildlife with the various technologies being developed to capture ocean and hydrokinetic energy, special effort should be

made to find other man-made infrastructure that can give us insights into the potential impacts. The novelty of the technologies makes post-installation studies of impacts and adaptive management even more important.

Of course the novelty of the technologies also creates understandable concerns from project developers about allowing scientists access to proprietary information regarding system design. However, these concerns should not be allowed to hinder pre- and post-installation studies. Access for independent environmental research and develop should be a prerequisite for any federal support.

The idea of cumulative impacts takes on even greater importance in the context of ocean and hydrokinetic technologies. Not only should studies consider the impacts associated with multiple projects, initially, they should develop an understanding of the cumulative impacts of the multiple pieces of equipment being installed within the bounds of one project. Utility scale projects are likely to require more than one hundred individual generators. In certain parts of the ocean, the cumulative impacts of this many pieces of equipment could be dramatically different than the impacts of just one or two generators.

The only exception to the newness of this family of technologies is offshore wind energy. Given more mature nature of this technology it is appropriate that offshore wind is generally not included in the Marine Renewable Energy Research and Development Act of 2007. The only area where offshore wind should be explicitly included is in lessons learned studies and studies to build baseline data on regions with high ocean energy resources. Offshore wind energy projects could be an important source of information about energy project development and thus should be considered as part of post-construction studies of impacts. Also to the extent that regions are picked due to their having high resource value, the environmental effects of wind power should be considered in impact studies, as wind projects could contribute to the cumulative impacts concept described above.

Lastly, federal R&D should recognize the unique nature of our oceans and marine areas. They provide unique ecosystem services, they are used differently than land from both a commercial and recreational perspective, and they are extremely vulnerable to global warming. As a result of these differences, the policies and procedures for access for renewable energy projects are still being developed. The Minerals Management Service has taken the important step of conducting a programmatic environmental impact statement on its developing offshore energy permitting process. The Federal Energy Regulatory Commission should work with state and federal natural resource management agencies to do the same with new hydrokinetic technologies. Ocean and hydrokinetic energy may be too new for studies to offer anything other than preliminary guidance, but that's an important first step and only highlights the need to get started with environmental impact R&D now.

RECOMMENDATIONS

- Focus federal R&D dollars on studies of a few regions with high resource potential, study other manmade installations in oceans in order to anticipate impacts of ocean and hydrokinetic technologies, and prioritize post-installation lessons' learned studies.
- Require access for independent pre- and post-installation environmental studies as part of eligibility for any federal subsidies.
- Ensure that studies address the cumulative impact of multiple projects and of multiple installations within one project.
- Exclude offshore wind from the Marine Renewable Energy Research and Development Act of 2007 except to study offshore wind projects to learn lessons that may inform other projects and as part of regional cumulative impact analyses.
- FERC should work with state and federal natural resource management agencies to do a programmatic environmental impact statement for the licensing of new hydrokinetic technologies.
- Regional studies should help build consensus around areas that are best suited for early development and those that should be avoided at least until the potential impacts of the technologies are much better understood.

STATEMENT OF SEAN O'NEILL, PRESIDENT, OCEAN RENEWABLE ENERGY COALITION

ABSTRACT

Development of a robust offshore renewables industry can: reduce reliance on foreign oil; rely upon ocean terrain for power generation as opposed to onshore land resources; revitalize shipyards, coastal industrial parks and shuttered naval bases;

create jobs in coastal communities; allow the U.S. to transfer technology to other countries, provide low cost power for niche or distributed uses like desalination plants, aquaculture, naval and military bases, powering stations for hybrid vehicles and for offshore oil and gas platforms; provide use for decommissioned oil platforms through “rigs to reefs program”. and promote coastal planning that reflects the goals of bio-diversity that maximize best comprehensive use of resources and capitalizes on synergies between offshore industries.

The industry needs funding for research and development, pilot and demonstration projects, resource assessments, and environmental studies, as well as an appropriate regulatory regime that embraces the concepts of adaptive management, proportionality, and common sense. Without a regulatory environment that provides some certainty the industry may not succeed. If subjected to dual regulatory regimes the industry will be subjected to unfair barriers to market entry. And without Federal Government support, the citizens of the United States, our environment, and our energy security will be deprived of the tremendous benefits that ocean renewable energy offers.

INTRODUCTION

Ocean Renewable Energy Coalition is the national trade association for marine and hydrokinetic renewable energy dedicated to promoting energy technologies from clean, renewable ocean resources. The coalition is working with industry leaders, academic scholars, and other interested NGO’s to encourage ocean renewable technologies and raise awareness of their vast potential to help secure an affordable, reliable, environmentally friendly energy future.

We seek a legislative and regulatory regime in the United States that fosters the development of ocean renewable technologies, their commercial development, and 0 in the race to capture the rich energy potential of our oceans. While other countries have already deployed viable, operating, power generating projects using the emission-free power of ocean waves, currents, and tidal forces, the U.S. is only beginning to acknowledge the importance these technologies.

Ocean energy can play a significant role in our nation’s renewable energy portfolio. With the right support, the United States ocean energy industry can be competitive internationally. With the right encouragement, ocean renewable energy technologies can help us reduce our reliance on foreign oil—fossil fuels, in general—and provide clean energy alternatives to conventional power generating systems. And with the right public awareness, our coastline communities can use ocean renewables as a springboard for coastal planning that reflects the principles of marine biodiversity. Today, OREC will address the steps that we must take to realize the promise and potential of ocean renewables.

Is the resource there? Yes, and the resource is located near highly populated areas on the coast, placing fewer demands on already taxed transmission infrastructure.

Is the resource cost competitive? Not yet, but indications suggest a much shorter time to commercial viability than experienced by many other renewable technologies.

Is the resource environmentally friendly? Ocean renewables present some of the most potentially environmentally benign energy technologies available today—no air emissions, no fuel costs or associated mining or drilling effects, no fuel transportation costs or related environmental effects, and, with proper siting and technology, minimal marine or fisheries effects. Unfortunately, there is very little data to support this last claim, yet the data that does exist suggests minimal impacts with proper technology and siting.

I. BACKGROUND

A. Types of Technology

Before we describe the benefits that ocean renewables offer, we take a step back and offer a description of the different technologies. Ocean energy refers to a range of technologies that utilize the oceans or ocean resources to generate electricity. Many ocean technologies are also adaptable to non-impoundment uses in other water bodies such as lakes or rivers. These technologies are can be separated into three main categories:

Wave Energy Converters.—These systems extract the power of ocean waves and convert it into electricity. Typically, these systems use either a water column or some type of surface or just-below-surface buoy to capture the wave power. In addition to oceans, some lakes may offer sufficient wave activity to support wave energy converter technology.

Tidal/Current.—These systems capture the energy of ocean currents below the wave surface and convert them into electricity. Typically, these systems rely on un-

derwater turbines, either horizontal or vertical, which rotate in either the ocean current or changing tide (either one way or electricity.), almost like an underwater windmill. These technologies can be sized or adapted for ocean or for use in lakes or non-impounded river sites.

Ocean Thermal Energy Conversion (OTEC).—OTEC generates electricity through the temperature differential in warmer surface water and colder deep water. Of ocean technologies, OTEC has the most limited applicability in the United States because it requires a 40-degree temperature differential that is typically available in locations like Hawaii and other more tropical climates.

Offshore Wind.—Offshore wind projects take advantage of the vast wind resources available across oceans and large water bodies. Out at sea, winds blow freely, unobstructed by any buildings or other structures. Moreover, winds over oceans are stronger than most onshore, thus allowing for wind projects with capacity factors of as much as 65 percent, in contrast to the 35-40 percent achieved onshore.

Other.—Marine biomass to generate fuel from marine plants or other organic materials, hydrogen generated from a variety of ocean renewables and marine geothermal power. There are also opportunities for hybrid projects, such as combination offshore wind and wave or even wind and natural gas.

B. The Status of U.S. Wave, Current and Tidal Projects

At present, prototype offshore renewable projects are moving forward in the United States. These include the following:

- New Jersey based Ocean Power Technologies (OPT) has operated a test wave energy buoy off the coast of Hawaii for the U.S. Navy. It has also operated a buoy off the coast of New Jersey funded by Board of Public Utilities since 2005 and in July 2006, filed a preliminary permit for a commercial wave farm at Reedsport, off the coast of Oregon.
- Finavera Renewables, Inc., has proposed a 1 MW pilot project for the Makah Bay off the coast of Washington state. The project is currently poised to complete a four-year permitting process at the Federal Energy Regulatory Commission (FERC). Most recently the Makah Bay Project received a finding of no significant impact from FERC for their Makah Bay project.
- New York based Verdant Power, Inc. is undergoing licensing at FERC and deployed six units of a tidal/current project located in the East River of New York in December 2006. These units have supplied reliable power to two commercial, yet non-paying due to FERC rules, customers on Roosevelt Island. Continuous operation has yielded no fish strikes or adverse marine impacts, to date.
- Australian based Energetech has formed a subsidiary in Rhode Island which has received funding from the Massachusetts Trust Collaborative and has planned a 750 kw project for Port Judith Rhode Island. Permitting has not yet commenced.
- Ocean Renewable Power Company of North Miami, Florida recently secured Preliminary FERC permits for two sites in Alaska
- Multiple permits for sites in Maine, California, Oregon, Alaska and Florida have been filed with the Federal Energy Regulatory Commission.
- The Minerals Management Service (MMS) now has authority to lease lands for offshore wind projects on the Outer Continental Shelf. MMS has conducted environmental review of the proposed 420 MW Cape Wind Farm off the coast of Nantucket, MA and LIPA/FPL 100 MW project off the coast of Long Island, NY.

C. Overseas

In Europe, projects are moving ahead. Europe has already installed 587 MW of offshore wind in Denmark, Holland, Scotland, England and UK. See <http://www.bwea.com/offshore/worldwide.html>. Two near shore wave projects, are operating in Scotland and Isle of Azores. Pelamis of OPD in Scotland is deploying the world's first commercial wind farm off the coast of Portugal and Marine Current Turbines has operated a prototype tidal project for 2 years.

D. Commercial Viability of Ocean Renewables

Offshore wind costs range from 3-8 cents per kWh compared to 2.5-7 cents onshore. (World Renewable Energy Report 2002-2007, Renewable UK). These figures have been derived based on operating experiences in Europe and reflect operating experience. Costs for offshore wind increase as projects move further offshore, necessitating more costly mooring systems and larger turbines.

As for wave and tidal, we have general parameters on cost, but they remain subject to further refinement. The World Renewable Energy Report estimates the cost of wave energy at an average of 9 cents/kWh and tidal and current an average of 8 cents/kWh.

Recent EPRI reports have found that, presently, the cost of power from ocean technologies ranges from 7 cents to 16 cents/kw in a low case scenario. For tidal, the May 2006 EPRI report found that the cost is driven by the resource, a strong resource can yield power at prices as low as 6 cents/kwh. Plus, similarities between tidal and offshore wind bring costs down.

And, the costs of offshore wind or wave are stable. Whereas natural gas and oil have fluctuated over the years (with natural gas now higher than ever), offshore wind and wave energy costs are stable, since the cost of renewable power sources like wind or wave are free. The analogy here is that renewable energy financing functions more like a fixed-rate mortgage as opposed to a variable rate mortgage associated with the use of finite fossil fuel resources.

Also, costs are expected to decline as the industry matures and as economies of scale make ocean projects less costly. To compare, back in 1978 wind energy cost 25 cents/kwh to produce—but now costs between 4.5 and 6 cents/kwh. Wave is already less costly than wind was in its early. Moreover, the EPRI report found that if wave had obtained the same government subsidies as wind, it would be a far more advanced technology than at present. As the offshore wind industry makes advancements on mooring systems, turbine durability and other issues that bear on the cost of marine projects, these advancements will help bring down the cost of ocean energy. In addition, if we can gain a better assessment of our resources, we can target the most powerful sites first and learn from our experience in these locations to bring costs down further.

In addition, ocean renewable energy offers other economic benefits. Development of a robust offshore renewables industry can:

- Reduce reliance on foreign oil
- Rely upon ocean terrain for power generation as opposed to onshore land resources
- Revitalize shipyards, coastal industrial parks and shuttered naval bases
- Create jobs in coastal communities
- Allow the U.S. to transfer technology to other countries, just as a country like Scotland is exporting its marine renewables know-how
- Provide low cost power for niche or distributed uses like desalination plants, aquaculture, naval and military bases, powering stations for hybrid vehicles and for offshore oil and gas platforms
- Provide use for decommissioned oil platforms through “rigs to reefs program”
- Promote coastal planning that reflects the goals of bio-diversity, that maximize best comprehensive use of resources and capitalizes on synergies between offshore industries.

II. WHAT THE INDUSTRY NEEDS TO ACHIEVE OUR GOALS

What will it take for the ocean renewable industry to move from where it is now to achieve its potential? OREC recommends the following actions:

More funding for R&D and technology development.—Wind energy has benefited from substantial government investment. Thirty years ago, wind cost 30 cents/kwh to generate; today, that cost stands at 3 to 7 cents/kwh. And even today, DOE continues to invest in wind. Just a few months ago, DOE announced a \$27 million partnership with GE to develop large-scale turbines and also issued a \$750,000 SBIR to Northern Power for offshore wind technology development.

Private developers have borne the costs of bringing the ocean energy technology forward for the past thirty years, but they need government support. Government funding will also give confidence to private investors and help attract private capital.

Resource Assessment.—At present, we do not even know the full potential of offshore renewables, because no agency has ever mapped the resource comprehensively. The Energy Policy Act of 2005 directed the Secretary of DOE to inventory our renewable resources but that work has never been funded. And even as MMS moves forward with a rulemaking for offshore renewables on the OCS, it has not received appropriations to map the resource.

Preliminary studies done by EPRI and private companies show that we have substantial ocean resources. But we will not know the full scope without further mapping and study.

Incentives for Private Investment.—Offshore renewables are compatible with other large industries in our country, such as oil and maritime industry. These industries, with the right tax incentives, can provide substantial support to offshore renewable development. Incentives could include investment tax credits for investment in offshore renewables and incentive to use abandoned shipyards and decommissioned platforms for prototypes and demonstration projects.

Incentives for coastal communities.—Coastal municipalities stand to gain tremendously from installation of offshore renewables. They need to be stakeholders in the process with a voice in development that takes place off their shores. Congress can support this by continuing to authorize Clean Renewable Energy Bonds (CREBS) and the Renewable Energy Portfolio Incentives (REPI) for coastal projects.

Reduced regulatory barriers.—Until companies get projects in the water, we will not learn about the environmental impacts or true costs of offshore renewables. Unfortunately, developers face onerous barriers to siting small, experimental projects. We should establish streamlined regulation and permitting for offshore renewables, with maximum cooperation between state and federal agencies.

A system to coordinate joint authorities could be established up front, either through MOUs, a Joint Office or liaison system, so there is one place that coordinates and integrates the lead agency process with other state and federal permits. Agencies will establish clear lines of responsibility and coordination and adhere to firm deadlines.

To minimize duplication of effort and develop expertise with hydrokinetic and offshore renewable technologies, each agency could dedicate teams of responsible parties from their respective agency that can coordinate on applications. The same team can learn the new technology, the new permitting and licensing process, and can more efficiently process all applications.

Another option is to create a Joint Hydrokinetic and Marine Renewables Office, staffed with key personnel from relevant agencies. Working through a joint office will increase accountability and enhance efficiency and information sharing. A Joint Renewables Office might require congressional authorization and funding as provided under section [need specifics]—whereby the Department of Interior has established a similar program.

III. PRINCIPLES OF ADAPTIVE MANAGEMENT

The concept of adaptive management allows for modification of project operation to accommodate newly discovered affects. For nascent technologies, adaptive management is preferable to a front loaded process, because it allows continued collection of data and ongoing monitoring after the project is deployed. Information gleaned from adaptive management is therefore, more accurate about affects than pre-deployment studies and projections. Adaptive management also allows for proportionality—the actions taken should be proportional to the adverse impacts identified. This concept is critical to the development of this industry.

IV. DUAL REGULATION STIFLES INNOVATION, IS ANTI-COMPETITIVE, AND WASTEFUL

OREC seeks resolution of any jurisdictional conflicts between MMS and FERC for projects on the OCS. Above all, OREC seeks to avoid duplicative regulation and potentially competing requirements by FERC and MMS. Duplicative regulation will burden marine renewable developers and unnecessarily waste taxpayer dollars. In addition, duplicative regulation or lack of coordination between FERC and MMS could result in marine energy developers paying annual charges associated with administration of the Federal Power Act under Section 10(e) and royalty payments required by Section 388 of the EPCA of 2005. OREC expresses no preference to which agency should govern on the OCS, so long as the eventual process adopted incorporates any other necessary procedures, allows for one coordinated, simultaneous process rather than disparate or consecutive procedures and above all, and does not create delays, overlap or the potential for conflicting conditions.

To date, FERC and MMS have been negotiating a Memorandum of Understanding (MOU) which would govern regulation of marine renewables on the OCS, but an MOU has not yet issued. Consequently, some action is required to resolve the ongoing FERC-MMS dispute which is perpetuating regulatory uncertainty and stymieing development.

V. MMS DELAY IN RULEMAKING

Section 388 of the Energy Policy Act of 2005 directed MMS to issue regulations for leasing lands on the OCS for alternate energy development within 270 days of enactment of the statute, or August 9, 2005. The deadline for issuance of regulations has long passed. Offshore wind and wave energy developers are eager to explore the resources of the OCS and site test buoys or test towers to gather data, but in the absence of any rules—even interim rules—none of this testing can proceed. Since developers typically require at least one year of test data prior to commencing project development, MMS failure to enact rules has already set the industry back two years (both the year needed for tests and the year delay in issuing the rules). MMS must make provisions now to allow developers to proceed with test facilities.

VI. CONCLUSION

Both the Federal Energy Regulatory Commission and the Minerals Management Service were established decades ago with responsibility over large scale energy development. An ultimate siting decision would trigger, in many cases, a final approval to impact expansive tracts of land or marine terrain for energy production. With the resurgence of hydrokinetic and marine renewables, both of these agencies have undertaken the enormous task of interpreting their mission, as defined by law, in the regulation and permitting of these new and emerging technologies. I applaud their efforts and encourage them to achieve a timely, fair, and realistic approach.

It is essential that a licensing process for new and emerging renewable technologies take into account the principles of proportionality and fairness while encouraging innovation to address our common environmental and energy goals.

Is the resource there? Yes, and the resource is located near highly populated areas on the coast, placing fewer demands on already taxed transmission infrastructure.

Is the resource cost competitive? Not yet, but indications suggest a much shorter time to commercial viability than experienced by many other renewable technologies.

Is the resource environmentally friendly? Ocean renewables present some of the most potentially environmentally benign energy technologies available today—no air emissions, no fuel costs or associated mining or drilling effects, no fuel transportation costs or related environmental effects, and, with proper siting and technology, minimal marine or fisheries effects. Unfortunately, there is very little data to support this last claim, yet the data that does exist suggests minimal impacts with proper technology and siting.

Ocean renewables can help diversify our energy portfolio and improve our environment. With the proper support, these resources will become a robust part of a reliable, affordable, clean electric supply portfolio.